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ABSTRACT

This text is intended to portray the interrelationships of a region's environment, population, and economy. The first chapter defines these interrelationships. The second chapter focuses on economic changes in Arkansas since 1940. The third chapter examines population changes in Arkansas since 1940. The final chapter demonstrates that all these factors are interrelated. Specific examples of Arkansas situations are used in two simulation games. (Author/RE)

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ENVIRONMENTAL IMPACTS OF ECONOMIC AND POPULATION CHANGE IN ARKANSAS

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PREFACE

Population, economic, and environmental interrelationships are changing rapidly in Arkansas and throughout the nation. The lives of all Americans have been affected by these changes. In the future, changes will probably occur more rapidly and will alter people's lives even more dramatically. Just as our nation has changed from a country of small farms (in 1960), it is changing from a country of city dwellers to one with greater dispersion of population in rural areas. Economic, environmental, and population realities may dictate such changes in the future.

In order to prepare for future changes, the factors affecting our present lifestyle must be understood. This text focuses on environmental, economic, and population relationships in Arkansas between 1940 and 1975. By understanding the changes in Arkansas during the last 35 years, Arkansans will be more skilled in understanding and coping with changes in the future.

The basic premise of this book supports the fact that a region's environment, population, and economy are interrelated. Changes in one aspect produces predictable changes in the other. The first chapter defines interrelations between the environment, economy, and population of a region. The second chapter focuses upon economic changes in Arkansas since 1940. The third chapter examines Arkansas population changes since 1940. The final chapter demonstrates that all these factors are interrelated. Specific Arkansas examples, which include data on agriculture and industry, are used in two simulation games in applying this data.

Chapter 1: THE ENVIRONMENT

MAJOR CONCEPT: ENVIRONMENTAL CONSIDERATIONS PLAY A TREMENDOUS ROLE IN TODAY'S ECONOMIC, SOCIAL, AND POLITICAL DECISIONS.

OBJECTIVES: At the conclusion of this chapter, students will be able to:

1. Define environment and terms applicable to the chapter.
2. Describe interrelationships in the environment.
3. Identify the basics of an economic system.
4. Analyze and evaluate consequences of human actions relative to environmental concerns.
5. Explain and evaluate means of minimizing negative environmental impacts.

TERMS:

- environment
- environmental impacts
- life-support systems
- pollution
- atmosphere
- biosphere
- lithosphere
- hydrosphere
- environmentalist
- aquatic life
- natural environment
- predators
- unspoiled areas
- depletion
- economic system
- needs
- services
- collective goods
- individual goods
- scarcity
- specialization
- interdependency
- innovation
- technology
- standard of living
- constraints
- self-sufficient
- non-renewable resources
- conservation
- ecological
- renewable resources

CHAPTER 1: THE ENVIRONMENT

Before the era of increased environmental awareness, construction of any project which could produce more money for an area was popularly supported. Detailed investigation of all of the impacts of construction reveals that few projects produce benefits for everyone. Some people are unable or unwilling to adapt to changes brought about by new projects affecting the environment or economy. Farmers who lose their land for highways or reservoirs are often forced to move. Some people may lose their place of employment because of construction. In addition, most construction affects a region's wildlife, plantlife, and life-support systems (water, air, land, etc.) Nationally, environmental discussions surrounding many construction projects have lasted for several years. Within Arkansas, major controversies have centered upon the Wilbur Mills Freeway in Little Rock, forest management policies, many reservoirs, channelization of the Cache River in Eastern Arkansas, and the pollution control equipment to be installed on the new electric generators in the state. After much arguing, some of these controversies have been resolved, but new controversies are appearing. These controversies have shown that each situation is unique, and that each problem requires solutions based upon the individual situation.

Most environmental controversies have become complex arguments that have ignored some basic questions. Probably the most basic question is defining environment. The environment is all of our surroundings. More formally, a scientist might define the environment as including the atmosphere (air), biosphere (all life), lithosphere (earth), and hydrosphere (water.) The scientist's definition lists each of the individual parts of the environment. In addition, the scientist would probably note that each part of the environment has direct impacts on the other parts. In other words, all parts of the environment are interrelated.

Almost all human actions have impacts on the environment. For example, the warm houses we live in and the traditional American diet have produced significant environmental alterations within our atmosphere, hydrosphere, biosphere, and lithosphere. Similarly, the lifestyles of other less technologically advanced cultures, such as the American Indian, have also produced environmental changes. In the modern United States, the increased use of machines and shifts of population have produced new effects on the environment.

An interest in preserving our environment has resulted in many new laws being passed during the last decade. Written statements (called Environmental Impact Statements) and public hearings are now required to assess the environmental impact of new construction projects. Interested persons are given the opportunity to analyze and criticize plans for construction projects. State and federal governments are obligated to ensure that negative environmental

impacts are minimized. Many ordinary Americans are using these new environmental requirements to prevent negative environmental impacts from occurring.

Examples

The Interstate Highway System is a major construction project. It was designed and almost completed before the recent increase of environmental awareness in America. Environmental impact statements were not required before the construction of most portions of the Interstate System, but the entire system has had uncounted environmental impacts. Most Americans believe that good highways, such as the Interstate System, are needed and they also support highway construction. When started in 1956, the Interstate System was planned to provide high speed highways with limited access between major cities in the United States. These highways were scheduled for completion by 1972. However, the completion date now is pending. It was believed that many of the nation's transportation problems were being solved for the immediate future. Travel speeds were increased to 70 mph in most parts of the country. In Arkansas, I-40, I-55, and I-30 are major parts of this interstate system.

An unforeseen occurrence which affected the use of these highways was the 1973 Arab oil embargo. For the first time, Americans were confronted with petroleum shortages and much higher gasoline prices. The federal government, who paid for the interstate highways, tried to decrease gasoline consumption by reducing traffic volumes and speeds. The country now possesses a system of highways designed for large traffic volumes at speeds of 80 mph, but it has the petroleum resources for speeds of only 55 mph. When the Interstate System was planned the question of gasoline availability was overlooked.

Other environmental impacts such as increased suburban sprawl, automobile air pollution, etc., were not considered. If the many impacts (both positive and negative) of the Interstate System had been identified, the entire system may have been modified before it was built. Without forethought and detailed consideration of the impacts, many potential problems were overlooked or not considered in the planning.

Within Arkansas, many similar environmental controversies have developed. A continuing controversy has been the generation of electrical power. The controversy started in 1967 with the decision to build Arkansas Nuclear I near Russellville. At this time, formal environmental impact statements were not required, although some consideration of potential environmental problems were made.

The decision of Arkansas Power & Light, the state's major electrical utility, to build Nuclear I marked a major change in the electricity supply policy for Arkansas. Previously, AP&L had bought a great deal of electricity from surrounding states to supply Arkansas

demands. Most of this electricity was generated by burning natural gas. AP&L decided that much of the electricity consumed in Arkansas should be produced in Arkansas by the state's utility companies. In addition, AP&L decided that potential shortages and price increases for traditional electricity generating fuels such as coal, fuel oil, lignite, and natural gas made them unsuitable for this new plant. Therefore, AP&L paid a much higher price to build a nuclear powered plant (the most expensive privately financed construction project ever undertaken in Arkansas.) The lower costs for nuclear fuel were to offset the higher construction costs. This was the first nuclear powered generating station in the Southwest (Figure 1).

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Two major environmental questions were raised in regard to Nuclear I: (1) the safety of a nuclear power plant and (2) the impact of the plant on the aquatic life in nearby Dardenelle Reservoir. All nuclear plants have raised questions regarding the safety of nuclear power. Many people worried that an accident or construction deficiency could result in widespread atomic radiation, or even worse, a nuclear explosion. Although this has never happened, it is a remote possibility. Another concern was that electricity generating plants have impacts on nearby aquatic life. Nuclear plants use tremendous quantities of water to cool the plant, and they release this hot water to nearby streams and lakes. Cooling ponds and towers reduce the amount of heat, but warm water is released into local waterbodies. The increased water temperature can harm aquatic life in nearby streams and lakes.

Since its opening in 1974, Arkansas Nuclear I has shown that both of these environmental fears were overstated. No major accidents or explosions have occurred nor has there been excessive atomic radiation. According to biological studies conducted since the opening of the plant, the heated water has had little negative impact on the aquatic life of Dardenelle Reservoir. If anything, it has improved winter fishing in the Reservoir by increasing the water temperature slightly.

There have been other problems associated with nuclear power, however. Spent nuclear fuel has become a major problem of the United States. In 1967, when Nuclear I was planned, the federal government thought it could quickly discover a disposal process for spent nuclear fuel. This optimism of the government was unfounded, and the country has a dangerous mountain of spent nuclear fuel awaiting permanent disposal. Arkansas Nuclear I has not been nearly as reliable as hoped for. In fact, it was operating at full capacity for less than half of the time in its first two years of operation. This was the worst record for nuclear power in the country. Though AP&L is not going to abandon Nuclear I, its new generating plants at Redfield and Newark are going to use coal.

Other Arkansas controversies have surrounded the damming of free-flowing streams for large reservoirs. The reservoirs are used for electricity generation, local water supply, recreation, downstream flood control, and countless other uses. Since 1940, more than twenty large water impoundments have been constructed primarily for flood control by the U.S. Army Corps of Engineers in Arkansas. Numerous additional reservoirs have been proposed by the Corps. Many Arkansans have protested the disappearance of free-flowing streams in the state. New reservoir proposals face tremendous opposition within the state (Figure 2).

"Where's Your Drafting Department? This Place Is A Mess.'

Reprinted with permission of the "Arkansas Gazette"

The White River in Northern Arkansas now has three flood-control reservoirs on its main stream and additional dams on its tributaries. Most of these reservoirs were constructed to prevent another destructive

flood like the one which occurred in 1927. Beaver Reservoir, opened in 1966, was the last reservoir constructed on the White River, and it has the smallest flood control storage capacity of the reservoirs on the White River.

Before the construction of Beaver Reservoir, Table Rock and Bull Shoals were the only reservoirs on the main stream of the White River. The levels of these reservoirs fluctuated dramatically during floods, and their use for recreation and electricity generation was limited. Construction of Beaver Reservoir (from 1961-1966) was before the requirement of detailed Environmental Impact Statements. Beaver Reservoir cost $46,600,000 and flooded more than 28,000 acres. In the process of the construction of this reservoir, many miles of particularly scenic free-flowing water were flooded, several towns and farms were inundated, and Monte Ne, an interesting old utopian community near Rogers, disappeared. With the completion of Beaver Reservoir, only two out of fifty years will have floods too large for the present flood-control reservoirs on the White River.

Since its construction, Beaver Reservoir has presented unforeseen problems and benefits. Although originally designed as a flood-control reservoir, Beaver has reached its maximum storage capacity only twice in its first twelve years of operation. Instead of flood control, its major benefits have been water supply and recreation. Already, most large Northwest Arkansas communities such as Fayetteville, Springdale, Rogers, and Bentonville obtain their water from Beaver Lake. In addition, many smaller communities and rural areas utilize it as a source for domestic water. More than a dozen public parks surround the reservoir, and more than two million people visit it annually for recreation. Beaver Reservoir is so attractive that people have built homes near its shores.

The attractiveness of Beaver Reservoir has also produced its major problem--pollution. The treated sewage of some communities, such as Fayetteville, is returned to Beaver Reservoir. In addition, most people living near the lake use septic tanks which drain into the Reservoir. Frequently, these tanks do not work properly and much untreated sewage enters the Reservoir. Algae is already a problem in parts of the lake.

Today there are many Americans concerned about environmental degradation. These concerned persons are often called "environmentalists." They believe that all impacts associated with any major construction project should be identified and avoided. However, they may have differing views on environmental issues. People concerned with the environment come from all walks of life-teachers, students, businessmen, etc.

HUMANS AND THE ENVIRONMENT

Humans, as do all living organisms, have a place in the natural environment. However, men and women differ from most living things in that they have the power to change long established environmental relationships. Through superior personnel organization and the use of machines, one can change almost any natural environment. The building of large cities in deserts such as Phoenix, Arizona, and Cairo, Egypt, are examples of the skills of man. In addition, human beings lack predators in the natural environment. If food can be provided, there are few limits to the number of people who can live in an area.

It is quite evident that environmental changes have occurred and are still occurring in our country. However, error has taught us that nature renews itself in unspoiled areas. The preserved lands of our national parks are an example of this. Since most forest fires are started by people, the Park Service has had a policy to put out all fires. After practicing this policy for about fifty years, the Park Service has learned that fires (caused by lightning) are a part of the natural environment. The complete control of fire permits older, over-mature trees to survive at the expense of younger growth. These older trees then become targets for diseases which may destroy an entire forest. The Park Service has now decided to let some fires burn, and it may even set some fires on purpose. Fire is reintroduced into the natural environment to help the forests renew themselves.

Few parts of our country have environments untouched by man. The fact that we can still live in our environmentally altered country does not mean that we can continue to ignore environmental changes. Many of our resources are already depleted, and some of our lands have been damaged. Our population is still growing, and we must use our remaining resources wisely. We cannot ignore environmental issues if we wish to maintain our present living standard.

HUMANS AND THEIR ECONOMIC SYSTEM

It is the human condition on this planet, that in order to live, one must satisfy ones basic needs for food, clothing, and shelter. However, people are not satisfied in meeting only their basic needs. Rapid transportation, easy entertainment, modern medical care, and instant communication are also desired. Services as well as goods are important. In order to maximize satisfaction, people desire collective goods such as education, highways, and national parks, as well as private goods that are consumed individually. Human wants are virtually unlimited.

It is also part of the human condition that the means to satisfy these wants are limited. The production of goods and services requires the combination of natural resources such as soil, iron ore, and petroleum; human resources of mental and physical labor; and capital resources such as tools and factories. All these productive resources are limited. Therefore, when people use them to produce one good, another good must be given up (trade-offs).

Because resources to produce goods and services are limited, we cannot satisfy all our wants because of the problem of scarcity. Since all our wants cannot be satisfied, we must decide which are most important to us. We must make choices. For example, an individual with $3.00 to spend may have a desire to see a movie, to have a hamburger with all the trimmings, or to buy the latest paperback mystery. Since one cannot have all these things, one must decide which one wants most.

Nations must also make choices. With only a limited amount of steel available, when used to build automobiles, the steel available for building railroads is reduced. If the nation decides to use the lumber from a forest to build more single-family houses, the beauty of the uncut forest is lost. The cost of a cleaner environment reduces the output of other goods and services. Our country cannot escape the basic fact of scarcity. Trade-offs must be made.

Since resources are limited, we must strive to get as much as possible from them. One way to get more from limited resources is through specialization and division of labor. If each individual tries to provide for all his own needs, production is limited. Attempting to raise all one's own food, making one's own clothes, and building one's own home would be very difficult and time consuming in our society. A division of labor, which makes the most of each persons skills, increases efficiency - experts in agriculture growing food, and others specializing in building houses or sewing clothing. Then production is dramatically increased. Further division of labor has resulted in specific industries using assembly lines that have expanded production beyond the dreams of our forefathers.

When specialization is accompanied by increased use of technology, output is expanded even more. Technology may be defined as the practical application of a scientific principle. Technological innovation may result in a new process of production or a new product. For example, the use of technology in American agriculture such as new fertilizers, hybrid seed, and advanced equipment has enabled the American farmer to increase his output to eighteen times what it was at the beginning of this century. Specialization enables us to make use of more and more technology.

Specialization and the expanded use of technology have had other effects, in addition to increased output. One effect is the interdependence of people. Ninety-five percent of Americans depend entirely on the remaining five percent for food, their most basic need. We all depend on thousands of other people to contribute to the production of the goods and services we utilize every day.

Another consequence of specialization is the need for exchange. Because we do not produce everything we need, we must exchange part of our production to others for what they produce. Systems of transportation and communication are necessary for this exchange. We cannot take advantage of specialization and technology without such systems.

The success which we have in expanding output with our limited resources determines our standard of living. In the past, most Arkansans lived on small farms where they produced most of their needs individually. Such subsistence farming was characterized by a low standard of living. As we began to specialize in particular crops and to adopt advanced technology, the productivity and standard of living began to increase. Industry developed as a result of advancing technology, and specialized services became important. These developments have led to increased production from limited resources. This results in a higher standard of living.

While we all want increased standards of living, we must recognize that an expanding product affects the environment. The benefit or additional output should be compared to the cost of environmental degradation. If cost is greater than the benefit, additional output would be foolish. Determining cost and benefit is a difficult task, as it is often difficult to put numbers to qualitative factors. However, estimates can be made so that satisfying decisions are more likely. In the trade-off between economic expansion and maintaining a desirable environment, cost-benefit analysis can help us make better decisions.

ECONOMY AND THE ENVIRONMENT

The natural environment places restrictions on the economy of regions. It is impossible for some areas to efficiently produce certain products in large quantities. Instead of trying to be self-sufficient in all products, most areas specialize in the production of a few products for which they are especially well-adapted. These few products are marketed nationally or internationally, and the income is used to buy goods that are not produced locally.

Many parts of the United States have developed economic specializations. As an example, consider a typical American breakfast.

It may include orange juice (from Florida), bacon (from Illinois or Iowa hogs), eggs (from chickens fed with Illinois or Iowa grain), toast (from Kansas wheat), etc. Instead of agricultural products, other areas specialize in mineral production, manufactured goods, or services which they provide for the nation. Automobiles from Detroit are powered and lubricated by Texas petroleum. They are insured by companies with head-quarters in Hartford, Connecticut. Through such regional specializations, all portions of our country become economically interconnected.

As technologies, tastes, and environments are modified, regional specializations change. Before the automobile and the internal combustion engine, Texas produced little oil. Eventually, due to increased consumption, its oil supply will become exhausted. Texas will then be forced to specialize in other products. If Texas is unable to make such adjustments, the state's income and living standard will decline. Changes in production patterns are constantly occurring.

Product specialization obviously creates environmental problems. Because some economic activities use non-renewable resources, some specializations have well-defined, limited production periods. As an example, mining activities will end when resources are exhausted. An income source which maintained an area has been removed, thus causing people to leave the area or develop new ways of making a living. Ghost towns scattered throughout the United States are evidence of communities being unable to adapt to change. Because all mines are going to play out eventually, minerals should not be wasted. Through conservation and waste reduction of practices, the usable life of many mines can be extended.

Many economic specializations use resources which can be preserved and renewed through proper management. If mismanaged, however, they may become permanently destroyed. This is especially true of agricultural enterprises. In the United States, much of the original forest vegetation has been removed from the land. The ecological relationships which formed and maintained the soils have been changed and, now fields are cropped annually or used as pasture. Through proper management and fertilization, these soils can remain productive for long periods into the future. If mismanaged, the yields and incomes from these lands will decline, and local living standards will also decline. Because of carelessness or lack of knowledge, soil depletion and erosion have rendered large tracts of cropland unfit for future production in our country. Many of these lands have been removed from cropping and are left to grow in brush or used as pastures.

Tourist and retirement areas use their scenery, pleasant life-styles, or other endowments to attract people and their money from other regions. Obviously, if the attractiveness of vacation and retirement areas is destroyed (through too much crowding, commercialization, or pollution), the tourists and retirees and their money will

disappear. In addition, such communities must provide a satisfactory lifestyle for its residents. Enough income must be provided to ensure reasonable living standards, even during off-seasons.

Through conservation, preservation, and proper management, environmental degradation can usually be prevented. The problem is, that conservation, preservation, and proper management are reallocation of resources that can cost much money. As of now, our technology can reduce or stop many forms of environmental degradation associated with economic activities. Often, the costs of preventing such pollution are very high. All Americans must determine the amount of environmental degradation that is acceptable, and the costs that our society will pay for environmental preservation. Finally, it will have to be determined who will pay the cost for environmental preservation or degradation. These are the basic issues of the environmental problem.

It is common knowledge that monies used for environmental preservation must be taken from other uses. Examples of this reallocation of funds for environmental preservation are all around us. In order to preserve air quality, expensive pollution control equipment is installed on electricity generators. The electric company then raises its rates to its customers, and the customers must pay higher bills with money that could have gone for other uses. Similarly, automobile buyers face higher car costs for air pollution equipment and unleaded gasoline. The federal government has decided that society needs and demands improved air quality. It has ordered large pollutors to stop spewing forth materials or gases which polute the air. A basic question is should the pollutor pay for the pollution control equipment? Or, should the pollutor be permitted to raise prices to cover the costs of pollution control? Thus causing the cost to be passed on to the consumer. Or, should society (possibly through taxation) pay for pollution control equipment? Similar decisions with regard to sewage, solid wastes, etc., must be made.

In the past, when pollution and the results of pollution were not considered, wastes were discarded. If someone was harmed by such wastes, that was an individuals problem. As an example, consider the problems associated with water pollution. If fish are killed and water supplies contaminated, the pollutor probably is not hurt, but the people downstream are adversely affected. Essentially, the pollutor lets society (the people downstream) suffer the consequences of his pollution. With environmental protection laws, growing numbers of pollutors are forced to either clean up their water or go out of business. It has been decided that the pollutor must pay the cost of processing his waste instead of letting others suffer the consequences of pollution.

Pollution control is a new industry which offers great possibilities for future expansion. Ideally, waste products can be used as resources for other industries. Historically, animal and human wastes

have been used as a free source of fertilizer (by many farmers.) Industrial wastes can become the raw materials for other industries. For example, cement factories are often located near steel mills. Limestone, the major waste product from steel mills, is the prime ingredient for cement. In the future, we hope to discover uses for all wastes. This is based on the belief that waste products are simply displaced resources. This goal has not been reached, and unfortunately, waste disposal costs (along with other costs) must still be considered. However, with proper planning, the amounts of discarded waste materials can be minimized.

Discussion/Study Questions

1. Why would few construction projects produce benefits for all people? Explain and give examples.
2. What are some examples of harm caused by projects to individuals?
3. Describe how a certain type of construction could harm: (a) wildlife (b) plantlife (c) life-support systems
4. Would all three-wildlife, plantlife, life-support systems--necessarily be threatened at the same time? Why?
5. Why were there controversies over these Arkansas projects: Wilbur Mills Freeway, Bell-Foley Reservoir, and channelization of the Cache River?
6. What is a prime factor in the controversy over some environmental controls--e.g., pollution control equipment--what are the aspects which make it controversial?
7. What is the environment?
8. Show how each part of the environment relates or has impacts on other parts.
9. Describe at least 10 human actions that have impacts on the environment.
10. List ways we can lessen each of the negative impacts on our environment which were cited in question nine.
11. Describe the Interstate Highway System as an example of failure to realize or plan for environmental impacts.
12. How important is specialized college background or training in becoming an environmentalist?
13. Name several leading environmentalists--national, state, or local.
14. Give examples of people's skill in changing the environment.
15. What role does the natural environment have, and how has man intervened in this role?
16. List some resources that we have depleted or that are now scarce in Arkansas.
17. What is the importance of invention and discovery in human progress? How have these changes affected Arkansas economy and environment?
18. List men and women's basic needs.
19. Describe the problem of scarcity as related to people's needs and wants.
20. Discuss ways to get the fullest benefits from limited resources.
21. Describe the effects that specialization and expanded use of technology have had on our economy.
22. How have specialization and technology changed our standards of living?
23. How does the natural environment place constraints on the economy of a region? What are some in your area?
24. Describe how our nation is economically interconnected.
25. What causes changes in specializations of an area or state?
26. List some economic specializations that Arkansas is known for, has had in the past; is trying to develop for the future.
27. Give some examples of non-renewable resources.
28. How can the life of non-renewable resources be extended?

29. List some ways that environmental degradation can be prevented.
30. Discuss and evaluate the decisions that society must make in decisions about preservation vs. use of the environment.
31. Summarize the basic issues of the environmental problem.
32. Identify examples of reallocation of monies for environmental considerations.
33. Identify possibilities for future expansion in pollution control.

Activities

1. Interview a member of your family, news reporter, and/or leading citizen in your community as to the controversy about the Wilbur Mills Freeway, Bell-Foley Reservoir, or the Cache River.
2. Select a controversial project in your area or state. In a report to the class, give the advantages and disadvantages of the project.
3. Have a debate on a controversial project in your area or state. Let one student take each side and then have classmates vote as to whether or not project should be endorsed.
4. Write a letter to the editor of a local newspaper explaining your views concerning a controversial project in your area or state.
5. Hold a town meeting to discuss a real or imaginary project for your area or state. Select a mayor and members of a council. After a discussion, vote on what should be done about the issue.
6. On a map of Arkansas, locate the following: Wilbur Mills Freeway, Bell-Foley Reservoir, Cache River, and other major projects with environmental impacts.
7. Sewage and garbage disposal are major problems in many American communities. At present, how does your community handle its sewage? Where does this sewage eventually go? Can it pollute someone's water supply? Where do you get your drinking water? Answer the same questions about your community of 20 years ago.
8. Many states are trying to find ways to expand their freeway systems. Have any new freeways been planned in your area? If they are built, when would they be completed? Do you think that they will be built? Do you believe that more freeways should be built, considering the experience of the Interstate System?
9. Have a panel discussion on environmental impacts of a technological society, such as ours, and a non-technological society.
10. Take a survey in your community to determine how many of your neighbors, family, and acquaintances term themselves "environmentalist."
11. Give a short oral report on some well-known environmentalist.
12. As a class project, draw up a list of characteristics that would be necessary for a person to be classified as an environmentalist.
13. Locate the Interstate System in your area and in the state on a map of Arkansas. Compare it with a map of Arkansas before the Interstate System. Identify major environmental impacts.
14. Obtain the Environmental Impact Statement for a major local construction project (perhaps a new highway, reservoir, stream channelization, or electric generation station.) Evaluate the Environmental Impact Statement.
15. Prepare oral or written reports on some man-made environments.

16. Have a panel discussion on some developments concerning people's acceptance of natural phenomenon, e.g., fire caused by natural means to rid forests of older trees that might become disease prone.
17. On a map of Arkansas, locate some man-made environments. (ex. Narrows Dam.)
18. On a map of Arkansas and the United States, locate any environments that may have been relatively untouched by humans.
19. Interview a senior citizen concerning man-made environmental changes in your own area.
20. Every day people and organizations must make difficult decisions about the best way to spend money. Assume someone were to give your school district $5,000. How do you think this money should be spent? Try to get a majority of your class to agree with an allocation that would be favorably perceived by the local tax payers. What does your teacher think the money should be used for?
21. Construct a chart or graph showing changes in the standard of living in Arkansas over ten year periods of time, beginning in 1940.
22. Have a panel discussion or debate on the issue that Americans may have to lower their standard of living in order to meet environmental pressures and ensure a future for their descendents.
23. On an outline map of Arkansas, use pictures, drawings, and symbols to indicate areas of specialization.
24. Prepare a bulletin board display showing Arkansas in a previous time and at the present time. Indicate areas of depleted or scarce resources, changes in economic specialization, etc.
25. Write a letter to a business concern or the editor of the newspaper expressing your feelings as to the cost burdens of environmental considerations. Indicate who should bear these burdens, why and how.
26. Interview a businessman in your area about the problems and additional expense associated with environmental controls. Report your findings to the class.

Chapter 2: ARKANSAS ECONOMY

MAJOR CONCEPT: The economy of Arkansas has undergone an immense change since 1940, and the effects of this change have been both beneficial and detrimental to the environment and economy of the state.

OBJECTIVES: On completion of this unit, the student will be able to:

1. Describe the economy in Arkansas in 1940.
2. Describe the economy in Arkansas in 1975.
3. Explain and evaluate changes which have taken place in Arkansas during that time.
4. Project possible changes in the Arkansas economy in the future.

TERMS:

labor intensive	Agribusiness
row crop	scientific farm management
money crop	specialized
per capita	tourism
capital	fragile
dominate	extractive
share-cropping	pesticides
mechanization	herbicides
diversified	subsistent

CHAPTER 2: ARKANSAS ECONOMY

Since 1940, the economy of Arkansas has undergone tremendous change. The state has changed from one with an economy dominated by agriculture to one with a well-balanced mixture of manufacturing, agricultural, and service industries. Due to these changes, Arkansas living standards have risen dramatically, so that state income levels are not much lower than the rest of the nation. These economic changes have altered many of the bio-physical and environmental relationships within the state.

The original white settlers of Arkansas were primarily farmers. Several natural obstacles made establishment of agriculture difficult in this state. Most, though not all, of the state was originally forested and removal of the trees was necessary before farming could begin. The Eastern portion of the state, often called the Delta, had deep fertile soil, but many portions were swampy. The hilly Ozarks and Ouachitas in the North and West, had thin rocky soils. South Arkansas, sometimes called the West Gulf Coastal Plain, was fairly flat but had less fertile soils than the Delta. The West Gulf Coastal Plain also had some swamps. Each of the regions have evolved a distinctive type of agriculture.

Farming has been attempted on almost all land in Arkansas. Although approximately half of the state is now covered by forest, almost all of it has been cleared at least once. These clearings have changed the relationships which produced the original soils. Until recently few farmers used fertilizers to replace soil nutrients removed by cultivation. In the rugged Ozarks and Ouachitas, soil erosion placed an added strain on the marginally productive soils. Compared to many urban areas, Arkansas appears to have an unspoiled natural environment. But the state's natural environment has been significantly altered by man.

Economic and environmental changes are continuing to occur in Arkansas. Since 1940 Arkansas has changed from an agricultural state with very limited industrialization, to a state similar to the rest of the country. Although agriculture is still relatively more important in Arkansas than in most states, industry has expanded to become a major component of the Arkansas economy.

ARKANSAS ECONOMY 1940

In 1940 Arkansas was a very poor agricultural state. Over half of the people lived and worked on small farms. A large portion of the others depended on farms indirectly for their livelihood in that they either bought from or sold to the farmers and/or processed

agricultural products. The 1940 per capita income for Arkansas was $254 or 42 percent of the national average.

In 1940 small family-operated farms dominated the Arkansas economy. The average farm was about eighty acres in size and was valued at $2,108. Most farm work was done by the family by hand with the assistance of perhaps a single hired hand. Horses and mules pulled the primitive farm machinery that was available. Almost all of the family food was raised on the farm, and any surplus was sold in town by "peddlin" from door to door or in a small curb market. The typical family had a large garden and kept chickens, pigs, and a cow or two for food. Cotton was the money crop (except in small portions of the Ozarks), and most towns had a gin to service the needs of farmers. Cotton was raised in all parts of the state including the Ozarks. As the price of cotton rose and fell, so did the prosperity of the state.

In 1940 corn and cotton were the dominant crops in most parts of the state. Cotton was sold as a source of agricultural income, and corn was fed to the work animals. Soybeans, rice, chickens, and cattle were just appearing as major income sources.

Arkansas also had some factories in 1940. Most of the state's factories processed locally produced raw materials, especially timber. These industries would have been classified as labor intensive. A labor intensive industry is one that employs a great deal of labor with limited machinery. Wages tend to be low in labor intensive industries. Only 52,823 workers were employed in Arkansas factories in 1940.

Ozarks and Ouachita Highlands

The highlands of Arkansas comprise the Northwestern half of the state. Though light manufacturing was important in the cities in 1940, agriculture was much more important for the entire region. Corn and cotton were the dominant crops in most of the area. However, fruit and vegetable production was significant in the Northwest corner and in the Arkansas River Valley.

Due to the character of Ozark and Ouachita agriculture, environmental degradation had become a major problem. In most portions of the Ozarks and Ouachitas, soils were thin and rocky. The original forest, which had produced these soils, had been cleared. The long-term cultivation of these soils without much fertilization had produced severe soil erosion. As a result of this long-term environmental degradation, farm yields and incomes were very low.

Delta

In 1940, the economy of the Delta was dominated by cotton. About half of the cultivated land in the Delta was used for cotton; the other

half corn. Cotton was sold for agricultural income, and the corn was used as feed for work animals. Rice production had begun in the Stuttgart area, and rice was produced with more advanced machinery. However, most areas of the Delta specialized in cotton production which utilized much hand labor.

Despite the high natural soil fertility, Eastern Arkansas living standards were very low. Because there were many farm workers, most farmers cultivated small acreages. The lack of machinery and use of small amounts of fertilizer produced relatively low yields. As cultivation continued over the decades with little fertilization, the soils were depleted of nutrients.

West Gulf Coastal Plain

The lands of Southern Arkansas are fairly level, but the soils are much less fertile than in the Delta. In 1940 cotton was the dominant cash crop, but large acreages were devoted to corn for the work animals and timber for lumber production. Because the soil was not very fertile, yields and living standards were low.

The West Gulf Coastal Plains also had some factories in 1940. Lumber production, which was the major factory type in the state, was concentrated in the West Gulf Coastal Plain. South Arkansas also has significant petroleum reserves, and oil production and refining were concentrated near El Dorado. Though South Arkansas had the only bauxite reserves in the United States, these were not used extensively until World War II.

Environmental degradation was also a major problem in South Arkansas. Little fertilizer was used on the cultivated lands and most of the forests were not well-managed. In fact, many of the forests were also used as cattle pastures and were often burned to kill cattle ticks. This frequent burning did not kill the ticks but did lower timber output. The low productivity of the economy of South Arkansas resulted in low living standards in the area.

1940 Arkansas Living Standards

In 1940 Arkansas was a very poor state in comparison to the rest of the nation. Few factories had entered the state and those few paid very low wages. Arkansas lacked some minerals needed by large industries but possessed many others. Capital was lacking for industrial investment and Arkansas had little money to buy manufactured goods. The state lacked good roads or river transportation to ship products. Educational and skill levels of workers were low. As a result, industries chose not to locate factories in Arkansas.

The backward agricultural system produced little money for farmers. Without money, farmers could not purchase machinery, fuel,

ARKANSAS REGIONS

or fertilizer. Without these items, Arkansas agriculture could not become more productive and living standards remained low. In 1940 only 10 percent of the farms had electricity and only 5 percent had telephones or running water. These low living standards resulted in many Arkansans leaving the state at the first opportunity.

ARKANSAS ECONOMY 1975

The Arkansas economy had changed dramatically by 1975. Per capita income had risen to $3,956 or about 78 percent of the national average. As the number of farms declined, manufacturing grew as a major source of employment. New and diversified crop rotations replaced the cotton-dominated agricultural economy of the 1940's. Similarly a diversified manufacturing structure replaced the lumber dominance of the 1940's. Even with these dramatic changes, Arkansas retained the pleasant and peaceful environment desired by many Americans.

Increased capital investments accounted for many of these economic changes. Since World War II new transportation routes--the Interstate Highway System and the McClellan Navigation Project--have greatly improved transportation within the state. Increased education emphasis helped in providing a more skilled labor force. Nationally owned corporations and companies diversified by locating in Arkansas. State and local governments attracted new industries by providing loans, tax breaks, and other inducements to prospective employers. Many manufacturers responded to these and other factors and located in Arkansas.

Agriculture, though modified, is still an important part of the economy. Greater capital investments and product specialization increased the productivity of most farms. The number of farms decreased by 75 percent since 1940 as the average farm size grew at a similar rate. The average farm value is more than $120,000. This figure does not include the expensive farm machinery found on most farms. The small subsistence farm of the 1940's had been replaced by a much larger and more productive farm in 1975. Each of the regions of Arkansas had experienced major changes.

Ozark and Ouachita Economy

By 1975 the economy of the highland areas had changed considerably from what it was in the 1940's. Row crops such as cotton and corn practically disappeared from this area and were replaced by poultry and cattle production. Arkansas is now the top poultry producer in the nation. Much of the poultry is produced in the highlands. Intensive poultry production produces much chicken litter which is an excellent fertilizer. This litter is being used to rebuild soils depleted by earlier cultivation. In the Ouachitas, large-scale timber production has become a major source of income.

Numerous factories have moved into the Ozarks and Ouachitas. Some of the factories process local raw materials--timber and poultry--while

others produce a great variety of products. Factories in Northwest Arkansas manufacture products ranging from panty hose to BB guns. In particular, a large number of factories produce metal products, clothing, and furniture.

Environmental relationships have changed in the highland areas. Although some forests have not been regrown, the soil fertility has been renewed through application of fertilizer, chicken litter, and improved management. In the more rugged areas the Ozark and Ouachita National Forests occupy large acreages that were previously cultivated. The regrowth of these forests has reduced local soil erosion and water pollution. Some of the new factories produce air and water pollution. In particular, wood and poultry processing can produce severe water or air pollution.

The National Forests and the new reservoirs have combined with other factors to attract many older Americans to the highlands. Several communities have been built specifically for retirees. Other people have found employment in the new factories in the hills. The sewage and garbage produced by these new residents has become a major problem in some areas.

Delta

Agriculture in the Delta has changed. Corn has almost disappeared as a crop in Eastern Arkansas and cotton acreages have declined. Soybeans have become the largest crop in the Delta; although rice is more important in some areas. Despite declining acreages, cotton remains an important crop. Many swamps have been drained to increase farm acreages. However, large-scale mechanization has replaced farm animals and laborers and people have had to leave the Delta farms to look for jobs in other areas.

Scientific farming principles are employed extensively in the Delta. Fertilizers, pesticides, and herbicides are widely used. A problem resulting from their use is the pollution of local water supplies and the entrance of such pollutants into food chains. Rice production requires tremendous quantities of irrigation water, and water tables are falling in some areas because of heavy irrigation. Many swamps have been drained, and some streams have been straightened to increase crop acreages. All of these changes have altered the natural environment of the Delta.

Many new manufacturing industries have moved into the Delta. Numerous factories produce shoes, clothing, and agri-chemicals. There are also factories to process local agricultural products (rice and cotton). Other factories produce products ranging from toilets to TV sets. Fortunately, most of these industries produce little pollution.

West Gulf Coastal Plain

Cotton and corn are no longer the dominant crops in South Arkansas. Instead timber, cattle, and poultry are the main crops in this part of the state. In a few areas with superior soil fertility, soybeans, rice, and cotton are grown in a manner similar to the Delta. Scientific management of these previously depleted soils has increased fertility.

South Arkansas now has many factories. Wood and paper factories are scattered throughout the area. Factories associated with mineral production are also located in South Arkansas. Several metal fabricators and clothing factories are located in the coastal plain. Unfortunately, wood, petroleum, bauxite, and bromine production can produce significant pollution. However, soil depletion caused by earlier farming techniques is no longer a major problem.

THE FUTURE

The trends of the past three decades will probably continue. The size of Arkansas farms will continue to grow, as the number of farmers will decline. Manufacturing will continue to expand. In particular, communities along major transportation routes such as the Interstate Highways or the Arkansas River will be attractive to manufacturers. Although it is unlikely that petroleum or bauxite production will expand much in the future, other mineral industries could have significant expansion. With the growing energy crisis, coal production near Fort Smith and lignite production in East and South Arkansas may become major new industries.

Arkansas appears to have acquired enough job opportunities to limit the exodus of working-age people from the state. The growing numbers of older persons will continue to expand. As fuel costs continue to rise, warm winter locations such as Arkansas should be increasingly attractive to disillusioned city dwellers of the Northeast.

ARKANSAS ECONOMIC STATISTICS

Agriculture

ARKANSAS	1940	1975
number of farms	216,674	50,959
average size (acres)	83.3	287
average farm value	$2,108	$120,382
cropland harvested (acres)	6,609,833	6,639,182
corn (acres)	2,236,908	28,820
rice (acres)	153,095	697,885
soybeans (acres)	223,079	3,805,841
cotton (acres)	2,056,775	1,114,688
tomatoes (acres)	10,364	1,362
beans wax and green (acres)	3,070	2,648
horses and mules	620,474	24,945
cows and calves	982,173	1,959,927
chickens	14,634,191	437,192,605
OZARKS AND OUCHITAS		
corn (acres)	637,268	9,908
rice (acres)	0	12,826
soybeans (acres)	22,569	259,433
cotton (acres)	335,572	28,337
DELTA		
corn (acres)	1,168,024	13,874
rice (acres)	153,093	666,847
soybeans (acres)	177,204	3,377,792
cotton (acres)	1,373,054	1,018,253
WEST GULF COASTAL PLAIN		
corn (acres)	431,616	5,038
rice (acres)	2	18,212
soybeans (acres)	23,306	168,616
cotton (acres)	348,149	68,098

Source: Census of Agriculture: 1940 and 1975.

Industry Employment

ARKANSAS		
Food	7,188	25,942
Lumber and Wood	27,480	19,424
Electronic Equipment	86	10,690
Apparel and clothing	1,440	14,649
Metal Products (except machines)	753	12,903
Furniture	4,370	10,521
Paper	2,040	10,309
Leather (shoes)	5	8,285
Machinery except electrical	500	7,965
Printing and Publishing	1,995	7,454
Rubber and Plastics	27	6,197
Chemicals	2,254	5,604
Others	4,685	32,873
Totals	52,823	178,816

Source: Arkansas Industrial Development Foundation.

Discussion/Study Questions:

1. What basic change has occurred in the Arkansas economy since 1940?
2. Evaluate the results of this change.
3. Why was it difficult to establish agriculture in the state?
4. Why must Arkansas farmers keep up with improved ways of farming? With improved equipment and machinery? What happens to those farmers in Arkansas who do not keep up?
5. Arkansas contains three natural regions. What are the geographic characteristics of each of the natural regions of Arkansas?
6. Why is Arkansas' appearance as an unspoiled natural environment misleading?
7. Briefly describe Arkansas' economy in 1940.
8. What is meant by "money" or "cash" crop?
9. Describe a "labor intensive" industry.
10. Describe the economy of the Ozark and Ouachita Highlands in 1940.
11. How did environmental degradation force changes in agriculture in Arkansas?
12. Describe the economy of the Delta in 1940.
13. Describe the economy of the West Gulf Coastal Plain in 1940.
14. How much bromine is produced in Arkansas? What are its uses?
15. Characterize the living standards in Arkansas in 1940.
16. List the major characteristics of the Arkansas economy in 1975.
17. Briefly describe the economic conditions in each of the 3 regions in 1975.
18. Examine the table "Arkansas Economic Statistics." Summarize your major conclusions on what changes took place in Arkansas agriculture from 1940 to 1975. Speculate on what might have caused these changes to occur.
19. How did advances in the preservation and transportation of food affect the Arkansas economy? How did these changes affect the choices of Arkansans on where to live and work? What effect did they have on the growth of cities? What have been the long range environmental effects?
20. What forces have prevented Arkansas from developing a large metropolitan center similar to New York, Chicago, or Los Angeles? Or on a more modest scale like Dallas, St. Louis or Memphis? (How would you account for the variation in population density in the three major geographic regions of Arkansas?)
21. Examine the table on cropland in Arkansas on page 25. Compute totals for all crops for 1940 and 1975. How would you explain the dramatic changes which have taken place? What changes might take place in the future?

Activities

1. Write a page essay that describes the appearance of the land in your neighborhood in 1940. Interview older members of the community to determine if your description was accurate.
2. Interview the Chamber of Commerce in your town to determine their position on attracting industry to the community. In addition, try to learn the answers to the following questions:

1. What kind of industry do they want?
2. What are the advantages for locating in your community?
3. What would be the economic effects of new industry in the community--wages, water, sewer, etc.
4. What effects might the industry have on the environment of your community?

3. You want to become a farmer in your area. What investment will it take in order for you to begin operations?
   1. Cost of farmland and buildings _____
   2. Equipment and machinery _____
   3. Livestock, seed, fertilizer _____
   4. Working capital _____
   5. Loans, interest, etc. _____

   Total _____

   What can you conclude about what is necessary in order to make a profit in agriculture in Arkansas today as compared to 1940?
4. Begin a large chart titled "From Seed to Supermarket." On it show the steps in growing rice in Arkansas. See what you can learn about packaging and shipping the rice. As you study each step, add it to the chart.
5. Interview a banker to learn where the capital came from to develop the economy of your area since 1940. Ask him to project the capital needs of your area in order to maximize economic growth.
6. Contact the Environmental Protection Agency. Determine the pollution level index for your community. What are the major sources of pollutants? What is being done about them? At what cost?
7. Identify some labor intensive industries in your area. Why are they still in existence? What changes will have to take place before they disappear?
8. Talk with older people and list labor intensive industries for your area in 1940. Compare the numbers.
9. What are some changes which these labor intensive industries made in the environment?
10. What laws have been passed with environmental significance regarding these industries?
11. Interview a form of equipment store manager. If they have been established for some time, compare the volume of business now with as far back as possible.
12. Determine how many factories have been established in your area since 1940. List the beginning date for each factory.
13. Construct a class graph showing the occupations of parents of class members. Divide the occupations into services, agriculture, and manufacturing.
14. Construct a similar graph showing these figures in 1940.
15. On an outline map of the state of Arkansas, draw the major products of an area in the appropriate place on the map.
16. Assign a committee for each area of the state. Research the major product from that area by finding out:
    1. How labor intensive it is
    2. Its impact on the environment
    3. The employment opportunities for young people
    4. The reasons for the importance of this product in a particular area.

5. Changes which have taken place in this product in the last 30 years.

17. Take a class survey using a questionnaire, find out the following from members of the community:
    1. Would you like to see more industry developed in your area?
    2. Would you like to see more industry in your area even though the environment would be harmed?
    3. Which do you feel is of most concern in your community?
        (a) water pollution
        (b) air pollution
        (c) land pollution (litter, mining, etc.)
    4. Are you in favor of a larger more efficient airport nearby?
    5. Would you like to see a more extensive transportation system developed in your area?
    6. Would you be willing to pay more for a product if the extra cost was used to improve the environment?
    7. What do you feel is the most important environmental concern for your community?

    Show the results of the survey on a class chart.

18. What factors do you think have caused the drop of cotton from first to fifth place in Arkansas' list of most important agricultural products?

19. Much land in the United States has been removed from crop production. Where has land in your home county been removed from production in the last two decades? Why? What is this land now used for?

20. Today in the United States most people have a very specialized job. School teachers specialize in a few subjects at particular grade levels, checkers run cash registers at stores, and each person on a factory assembly line has a well-defined job. This specialization is a recent development. Not long ago in the United States there were many one-room school houses, most stores were run by a family and craftsmen built products one unit at a time.
    a. What has been the effect of labor specialization on workers and their attitudes toward their jobs?
    b. What has been the effect of labor specialization on the workers?
    c. What has been the effect of specialization on the quality of products.
    d. What have been recent attempts to offset effort of this by industries?
    e. Interview an assembly line worker to get information about his feelings toward his job.

21. Use the information on the chart on page 25 to develop hypotheses as to what caused tremendous changes. Use reference material or resource persons for data to defend your hypotheses.

22. Interview the county agent to determine how pests were controlled on agricultural lands in 1940; 1960; and now. What possible changes might have to be made in pest control in the future?

23. Interview the county agent to determine how agricultural lands were fertilized in 1940; 1960; and now. What possible changes might have to be made in fertilization processes in the future?

24. Go to a local farm store and ask for prices for pesticides, herbicides, and fertilizers. Compare with prices before 1970. Is this comparable for price increases for farm products? Why must the farmer continue to buy these products even though they have experienced price increases?
25. Interview a farmer concerning his position on joining the National Farmers Organization. What effects might the strengthening of this organization have on the economy of Arkansas and the benefits received by farmers.

Chapter 3: POPULATION CHANGE

MAJOR CONCEPT: Patterns of population change, changes in the economy and what people value are interacting forces which affect the lives of all Arkansans.

OBJECTIVES: At the conclusion of this chapter, students will be able to:

1. Describe and analyze population change processes.
2. Evaluate Arkansas population changes.
3. Identify present and project future patterns.

TERMS:

population	mobility
urban	"back to the Boonies"
sparse	density
census	metropolitan (complex)
immigration	rural
emigration	migration
	Sun Belt

CHAPTER 3: POPULATION CHANGE

From the time of its first European settlements, the United States has had unequal population densities. Some parts of the country have attracted tremendous numbers of people, while other areas remain barely inhabited. From the original settlement pattern along the East Coast, the entire United States has become populated by people other than the American Indian. Arkansas, primarily a rural state, is still one of the least densely settled states in the country. Though all of Arkansas is inhabited, the lack of a big metropolitan complex keeps the state's population total rather low. Several of the major American metropolitan areas have more people than does the State of Arkansas.

Many factors are responsible for differences in population densities. Some areas possess many of the resources necessary to support great densities of people, while other areas are so attractive that many necessities are shipped over long distances to supply a dense population. The urban concentration of Los Angeles is a monument to American ingenuity in overcoming natural obstacles. Large viaducts are used to ship water long distances to Los Angeles. Electricity for Los Angeles is generated in Northern Arizona. Food consumed in Los Angeles is grown all over the country. Many Americans want to live in a pleasant climate without winter. So since 1900, Los Angeles--which has almost a desert climate--has become a major urban complex. If Los Angeles were prevented from importing necessities such as water, its population would decline.

Settlement patterns are constantly changing. The factors that led to major urban complexes can change and produce new patterns. At the time of the American Revolution, Philadelphia was the capital and largest city of the United States. In 1890 Little Rock had more people than Houston. Arkansas Post, at the mouth of the Arkansas River, was the largest town in the Arkansas Territory in 1800. There are declines in numerous towns in the United States, especially river towns and mining towns. Before 1850 most United States freight was shipped by boat, and the larger cities were located along the coast or major rivers. The rapid expansion of United States railroad and later the highway system fundamentally altered the American transportation, trade, and manufacturing patterns. New cities, new mineral resources, and new agricultural areas could develop without the necessity of water transportation. In addition, the development of new and different mineral resources also produced new population concentrations. As an example, Houston's growth has resulted from the petroleum industry. Any major change in our lifestyle or economic system will produce new population patterns.

Arkansas has not had the combination of factors to produce any extremely large urban complexes. Little Rock has evolved as the political, economic, transportation, and population center of the state.

Since Little Rock is a state rather than a national urban center, it is not large compared to many cities. In 1970 more than 100 United States cities were larger than Little Rock. This rank could change, but is is unlikely that Little Rock will ever challenge regional centers such as Dallas or Memphis.

POPULATION PROCESSES

Since the first Census of Population in 1790, the United States population has increased during each decade. Present growth rates are lower than in the past, but United States population is continuing to grow. Three processes--births, deaths, and migration produce all changes in population. With the restrictions placed on immigration into the United States after World War I, births and deaths have produced most changes in the American population during recent decades. However, the mobility of the American population makes migration a major component of population change within the country.

Births and deaths are the causes of all world and most national population changes. American birth and death rates have been falling rapidly since 1900. The wide acceptance of simple health and sanitation measures have greatly lowered death rates. Americans are living longer. In 1900 an average American could expect to live 47 years, now the same average person can expect to live more than 70 years. American birth rates have also fallen dramatically. When most American families lived on farms, large numbers of children were an economic advantage. The children provided cheap labor for the farm, and they were expected to provide for the parents during old age. Today fewer Americans farm, and most children are not considered a source of labor. Pensions and Social Security have greatly decreased the need for old age assistance. So the size of the American family is much smaller than in the past. Where eight or ten children in a single family were common a century ago, three or four are considered many today.

These birth and death rate changes have greatly altered the structure of the U.S. population. Older people are a much larger segment of the population than they were in the past. In 1900 only 4 percent of the American population was aged 65 and older; today the percentage is 10.5 percent. Similarly, the number of youths is declining. After long-term expansions many school districts are facing enrollment declines. As family sizes continue to decline, the number of children will continue to decline.

Recent increases in the American population have not been evenly distributed. Despite the overall increase in the United States population, large areas of the country have been losing population. Between 1960 and 1970, the United States population grew by more than 20,000,000 people (13%). Yet of the more than 3,000 counties in the country, about 1,500 lost population. Obviously, the gains in the growing counties more than offset the losses in the declining counties. Generally, the declining counties had small populations and lost only a few poeple, while some of the growing counties had large populations and large increases.

Migration--not differences in birth and death rates--is the major cause of variances in population change rates in the United States. The American population has always been very mobile. Now almost 20 percent of the population changes address annually. Though most moves are only a short distance (to a different part of town perhaps), many people do move long distances. Historically, employment opportunities for an improved life have attracted most long distances moves. Moves within a community are often associated with factors such as a bigger house, a better school, nosey neighbors, etc.

Long distance moves have had the greatest impact on United States population patterns. Most Americans have migrated for greater economic opportunities. Famous movements for money have included the California Gold Rush and the construction of the Alaska Pipeline. These short-term migrations had less impact nationally than long-term migrations such as the population expansion westward, the migration to the nation's cities, or more recently the movement to the Sun Belt. These long-term migrations which occurred over a time of many years affected most people in the country. Each of these migrations has produced significant changes within the United States.

The first major migration in the United States was the movement westward. In its beginning the United States was a nation of farmers concentrated near the East Coast. As immigrants entered the country and as farmland was worn out, little desirable land remained in the East; so many people moved westward. To a major degree this search for farmland resulted in the settlement of Arkansas. By 1900 most of the desirable farm land in the country had been claimed. Irrigation projects were to open additional acreages for farming, but at least most of the country was occupied by that time. A second migration, which was to affect a greater number of people, had already started.

MOVE TO THE CITIES

The migration from farms to cities has been the dominant population movement in the twentieth century. This has also been a movement for economic benefits. Since the Civil War, the amount of hand labor needed on farms has been slowly declining in the United States. Machines have been replacing men on the farms. As tractors replaced draft animals, plows and cultivators replaced hoes, and mechanized pickers and combines replaced hand-picking, the amount of hand-labor has declined. Of course, this machinery is expensive and large tracts of land are needed to take full advantage of agricultural mechanization. Those farmers that were unable to purchase machinery and acquire additional land were forced to leave farms and migrate elsewhere.

As agriculture mechanizes, people are needed to work in factories to produce farm machinery as well as other goods. Since the Civil War (1861-1865) the United States economy has become mechanized,

industrialized, and specialized. Instead of subsisting on a farm and trying to be self sufficient, individual Americans have specialized in each phase of production. As a result the total output and living standards of the country have risen dramatically. Factory employment, managerial jobs, and service industry employment (merchants, repairmen, doctors, lawyers, teachers, etc.) have become the new source of jobs. People who leave farms fill many of these jobs, and most of these new jobs are located in cities. The character of the United States has been altered by these changes. Since the first census of population, the United States has changed from a nation of farmers to a nation of city dwellers. Today less than 10,000,000 Americans (about 5 percent of the total population) make a living as farmers (and they supply this nation of more than 200,000,000 with more food than ever before.) In fact, most of the people who live in the country make a living by something other than farming. Since 1900 (when most Americans lived in rural areas) the U.S. population has more than doubled and almost all of the growth has occurred in the cities.

The migrations from the farms did not occur at the same time in all areas. The production of different crops became mechanized at different times so the migration from farms occurred at different times. Wheat was the first crop to become mechanized. Corn followed shortly. When introduced in the United States, the large-scale production of rice and soybeans was already mechanized. Cotton has been the last major crop to be mechanized in the United States. Depopulation of rural areas has followed the mechanization. At earlier dates most of the new residents in the city were from farms in the Great Plains and Midwest (areas of wheat and corn production.) After World War II, a major migration from the South started with the mechanization of cotton production. On a national scale the rural-to-urban migration must now end. There are simply no rural areas left that have enough population to support a major migration.

World War II coupled with the rural-to-urban migration had a major impact on Arkansas population trends. The War tended to reinforce the impact of the rural-to-urban migration. Because of World War II large numbers of Arkansans (primarily from rural areas) left their homes. Though some were in the armed forces, many more were employed in war-related industries. By the end of the War, many Arkansans had seen and compared living styles on small farms and large cities. Many chose to move to the cities. Since Arkansas had few cities and few war industries (the aluminum industry southwest of Little Rock is a notable exception), most migrants left the state.

Between 1940 and 1950 Arkansas suffered a loss of 40,000 people, the first population decline the state ever recorded. In the next decade Arkansas lost 125,000 more people. These declines occurred while the United States population was gaining almost 50,000,000 inhabitants. Arkansas lost more people in these two decades than any state in the nation. In general, most rural areas lost population,

and urban areas gained people. Since Arkansas lacked a major urban complex and because most Arkansans lived in agricultural areas, Arkansas lost many people. World War II greatly speeded the effects of this migration from agricultural areas. The population movements caused by the War helped many people in rural areas recognize that living standards in rural areas were low, and that there was little opportunity for improvement. Rural areas, such as Arkansas, were losing working age people to the larger cities.

BACK TO THE BOONIES

Since 1960 a new major migration away from the nation's cities has started. This new migration has several names: urban-to-rural back to the land, back to the "boonies," shift to the Sun Belt, etc. Some areas--which two decades earlier--were losing large portions of their population have now become areas of rapid population growth. Not all rural areas of the United States are experiencing population growth. However, many rural areas with low taxes, attractive scenery, warm winters, and apparently attractive life-styles are gaining population. In contrast, many of the large cities in the Northeast are suffering population declines. In part this decline is the result of fewer births, but many people are leaving the cities of our nation.

The movement from the cities is also a movement for improved living standards. This migration however, is for qualitative improvements in life (clean air, pleasant climate, etc.) and not for increased incomes. This migration is a reflection of changes in values in the American lifestyle. No longer do Americans always equate a better life with more money. Instead, a better life may include a slower lifestyle, more pleasant surroundings, or less tension. The impact of these changes started to appear in the 1960's with slowed growth rates in the larger cities. Population estimates for 1975 reveal the increased magnitude of this new, dominant migration.

Since 1970 many Southern states have acquired rapidly growing populations. To a degree, harsh winters and rising fuel costs have increased the size of this movement. But the movement of people to the Sun Belt had already been well-established before the Arab oil embargo and resulting price increases. In fact, the harsh winters and high fuel costs are just now starting to affect the migration flows. Although some people may flaunt the fact that "I Survived the Great Blizzard of Buffalo" by wearing slogans on T-shirts, many more people are trying to leave before the next one occurs.

Older Americans, especially retirees, started the migration to the Sun Belt. These people have been joined by a cross-section of the rest of the population. Many factories are following to the South. Lower fuel costs, low taxes, a willing workforce, and pleasant surroundings are just some of the attractions. These employers bring more people and more factories to the South.

Again Arkansas has been affected by these national trends. Arkansas, which suffered the biggest population loss in the nation between 1940 and 1960, has been gaining population at more than twice the national rate since 1970. The decade of the 1960's marked the turning point in Arkansas population trends. Population declines were ended and growth began. Population growth did not immediately occur in all parts of the state as more than one-third of the counties continued to lose people in the 1960's. However, most of the hilly areas and most of the urban areas in the state did gain people in the 1960's.

Since 1970 the pattern of growth has continued. Only a few Arkansas counties are still losing population. Since 1970 the growth in many counties has become much greater. The size of the migration to the Sun Belt is increasing, and Arkansas has become a major beneficiary of this movement. Although recent Arkansas winters have been severe (by Arkansas standards), they have been mild by Northeastern standards. Arkansas' attractive and many lightly settled areas are appealing to disillusioned city dwellers. This migration into Arkansas may continue for a long period.

Discussion/Study Questions

1. List the 3 factors producing change in U.S. population.
2. Describe migration as a major component of population change within our country.
3. How has the concept of economic interdependence affected agriculture, manufacturing, and services in Arkansas since 1940?
4. What is the relationship of a good system of transportation to the changes cited in question 3?
5. What is the effect on the economy and environment as a result of the development of an adequate system of transport?
6. What is the major reason for migration? List and explain other factors.
7. Why did the U.S. change from a rural to an urban population?
8. What factors operate within Arkansas counties to cause them to grow or to decline in population? What factors are affecting population in your county?
9. Briefly describe farm mechanization and its influence on migration and lifestyle. List some crops which still have unmechanized phases of production. What procedures will have to be developed in order for these crops to be fully mechanized?
10. How would you relate employment opportunities and population change in Arkansas in 1940, 1960, and the present?
11. What percentage of Arkansas's population lived in rural areas in 1940, 1960, and the present? How does this compare with the national average in those years? How would you account for the difference?
12. How has the rural-urban migration affected Arkansas?
13. What value changes have occurred in the United States to cause a migration away from the cities and to rural states like Arkansas?
14. When did Arkansas experience its first population decline and why?
15. What is the "back to the Boonies" movement? List factors responsible for this development.
16. Name some areas in our nation particularly affected by this movement. How has it affected Arkansas?
17. What changes or forces in the American economy could change the migration of people into Arkansas?

Activities:

1. There has been a dramatic change in the number of children of a typical American family in recent decades. For the entire class determine:
   1. the number of children in each student's family
   2. the number of children in the family of the mother and father of each student. Compare the sizes of farm and non-farm families.
   3. the sizes of the families of the grandparents of each student. Again compare farm and non-farm family sizes.
2. Birth rates in the United States have been changing. In your local school district find out the number of students enrolled in each grade (kindergarten through high school). Which class is the largest? Which is the smallest? What does this mean for the school district? Nationally, the number of children born in the

United States has been declining since 1957.

3. Americans are becoming increasingly mobile and change their address very frequently. How many changes of address have each member of your class made in the last 5 years? Why did they move? Distances moved?
4. Trace your family tree.
   1. Where were they living in 1940?
   2. What did they do for a living?
   3. How large was the family?
   4. Where did they go to school?
   5. How much education did they have?
   6. How many changes in address has your family had since 1940?
5. Interview an older member of your family or someone from the community who lived in Arkansas in 1940. Ask them to describe life in Arkansas at that time. Write a paper describing the differences in life in 1940 and the present.
6. How may the growth of population increase pollution in your area? What do you think should be done about this possible problem?
7. What steps can be taken to protect the environment from population change in your area? Why is it difficult to take some of these steps?
8. What natural resources have been used up most rapidly in your area? Can they be replenished? At what cost? What do you think should be done about the problem in your area? In the state? In the nation?
9. What, if anything, should the government do about population migration?
10. Santa Barbara, California is controlling its population by preventing people from getting a water hookup on a new housing. Near Lake Tahoe, the people have decided to limit the population of their community by refusing to grant building permits. Do you think Arkansas should consider these possibilities to control population growth? Explain your position.
11. Economic growth has been important in raising the standard of living in Arkansas. At the same time environmental trade-offs occur. Interview ten people and report how they feel about this dilemma.
12. Interview your parents. Where are the people living who went to school with your parents? How many of them have moved? and for what reasons?
13. Get an old phone directory to determine change in your community and what caused it. Analyze the yellow pages in securing information on this change.
14. Listen to the recordings, "Arkansas" and "Leukenbach, Texas." Are these recordings representative of true feelings? Would these have any effect on a person's decision to move?
15. Invite a county agriculture or extension agency to talk about advantages and problems of farm mechanization.
16. Write to the Department of Local Services in Little Rock for information concerning projected changes, projects, and controversies which may affect the state of Arkansas and/or your area. Analyze the data and report your findings to the class.

17. What regional airport services are presently available for your area? Interview local government officials to determine if present services are adequate and what possible changes are being considered. Include in your data the costs of services for maintenance of the airport and how these costs are paid for. Prepare a written or oral report on this information. How would these factors effect population change and economic growth in your region?

Graph Activities

1. On one graph, plot rural, urban, and total population for the United States between 1900 and 1970 (you will have 3 lines.) Did most Americans live in rural or urban areas in 1900, 1920, and 1970? How much rural growth has occurred since 1900? How much urban growth has occurred since 1900? Where has most growth occurred, in urban or rural areas?
2. On one graph plot urban, rural and total population for Arkansas between 1900 and 1970. Compare and contrast Arkansas and U.S. population change over this period. Compare and contrast Arkansas and U.S. urban population change during this period. Compare and contrast Arkansas and U.S. rural population change during this period.

Map Activities

U.S. population growth areas and growth patterns have changed since 1940. Use the following percentages for:

	Rapid Growth	Slow Growth	Decline
1940-1960	more than 25%	0-25%	less than 0%
1950-1960	more than 19%	0-19%	less than 0%
1960-1970	more than 13%	0-13%	less than 0%
1960-1975	more than 4.8%	0-4.8%	less than 0%

On a map color the states red that grew rapidly, pink for those that grew slowly and black for those that declined. Prepare maps for the United States for the 1940-1960 period, 1960-1970 period, and 1970-1975 period. Compare and analyze the maps.

1. Which states have consistently gained population rapidly? slowly? consistently lost? Which states have changed from rapid to slow or no growth to rapid growth? What has caused these changes?

Use the same color scheme for Arkansas counties but substitute 1950-1960 for 1940-1960.

1. Between 1950-1960 what counties gained population? What are the major cities in each growth county? Which counties lost people? Why?
2. Between 1960-1970 where were the growth counties? What was the dominant agricultural crop in most counties that lost population between 1960 and 1970?
3. What does the 1970-1975 pattern show? Where are declines occurring? What is causing the growth in the rapidly growing counties?

4. How do the Arkansas patterns compare with the nation?
5. How has the Arkansas population change pattern changed since 1950?

Use a similar coloring scheme for the townships in Arkansas (rural, Delta County), Marion (rural, Ozark County), and Sebastian (urban county) counties for 1950-1960 and 1960-1970. How have the growth patterns changed? Where has growth occurred? Where have the declines occurred? What has caused these patterns? How do these trends compare with the state and nation?

Population Pyramid Exercises

Population pyramids are used to show the age and sex structure of population. Basically they are graphs of population. They are prepared as follows: the number of males and females of the population in each five year age grouping (0-4, 5-9, 10-14, etc.) is determined, these numbers are converted to percentages of the total population, and finally the percentages are plotted on a graph. On the graph, the y-axis is the age, the x-axis is the percentage of population in each age group. The middle of the x-axis is 0%, to the left of 0 is males and the right is females.

Below is data for the United States in 1950 and 1970. The pyramids are plotted on the next page.

1. How do the two pyramids differ?
2. In the 1970 pyramid identify the post-World War II baby boom, the declining U.S. birth rate, and the effects of the Great Depression.
3. Who lives longer, men or women?
4. Where are the World War II deaths?

Prepare pyramids for Arkansas in 1950 and 1970. How do they differ from each other, the state pyramid, and the national pyramid? Why?

Prepare pyramids for 1950 and 1970 for each of the counties. How have they changed? How do they differ from each other? How do they differ from the state and national pyramids?

STATE POPULATIONS: 1940-1975
(Population in Thousands)

	1940	1950	1960	1940-60 % Change	1970	1960-70 % Change	1975	1970-75 % Change
Ala.	2,833	3,062	3,267	15.3	3,444	5.4	3,614	4.9
Ariz.	499	750	1,302	160.8	1,772	36.1	2,224	25.3
Ark.	1,949	1,910	1,786	-8.4	1,923	7.7	2,116	10.0
Calif.	6,907	10,586	15,717	127.5	19,953	27.0	21,185	6.1
Colo.	1,123	1,325	1,754	56.1	3,207	25.8	2,539	14.7
Conn.	1,709	2,007	2,535	48.3	3,032	19.6	3,095	2.1
Del.	267	318	446	67.5	548	22.8	579	5.7
D.C.	663	802	764	15.2	757	-1.0	716	-5.4
Fla.	1,897	2,771	4,952	161.0	6,789	37.1	8,357	23.0
Ga.	3,124	3,445	3,943	16.2	4,590	16.4	4,926	7.4
Idaho	525	589	667	27.1	713	6.9	820	14.9
Ill.	7,897	8,712	10,081	27.7	11,114	10.2	11,145	.3
Ind.	3,428	3,934	4,662	36.0	5,194	11.4	5,311	2.2
Iowa	2,538	2,621	2,758	8.6	2,825	2.4	2,870	1.6
Kan.	1,801	1,905	2,179	21.0	2,249	3.2	2,267	.8
Ky.	2,846	2,945	3,038	6.8	3,219	6.0	3,396	5.4
La.	2,364	2,684	3,257	37.8	3,643	11.9	3,791	4.1
Maine	847	914	969	14.4	994	2.5	1,059	6.6
Md.	1,821	2,343	3,101	70.3	3,922	26.5	4,098	4.4
Mass	4,317	4,691	5,149	19.3	5,689	10.5	5,828	2.4
Mich.	5,256	6,372	7,823	48.8	8,875	13.4	9,157	3.1
Minn	2,792	2,982	3,414	22.3	3,805	11.4	3,926	3.1
Miss.	2,184	2,179	2,178	-.3	2,217	1.8	2,346	5.8
Mo.	3,785	3,955	4,320	14.1	4,677	8.3	4,763	1.8
Mont.	559	591	675	20.6	694	2.9	748	7.7
Neb.	1,316	1,326	1,411	7.3	1,484	5.1	1,546	4.1
Nev.	110	160	285	158.8	489	71.3	592	21.1
N.H.	492	533	607	23.5	738	21.5	818	10.9
N.J.	4,160	4,835	6,067	45.8	7,168	18.2	7,316	2.0
N.M.	532	681	951	78.8	1,016	6.8	1,147	12.7
N.Y.	13,479	14,830	16,782	24.5	18,241	8.7	18,120	-.7
N.C.	3,572	4,062	4,566	27.6	5,082	11.5	5,451	7.2
N.D.	642	620	632	-1.5	618	-2.3	635	2.7
Ohio	6,908	7,947	9,706	40.5	10,652	9.7	10,759	1.0
Okla	2,336	2,233	2,328	-.3	2,559	9.9	2,712	6.0
Ore.	1,090	1,521	1,769	62.3	2,091	18.2	2,288	9.4
Penn	9,900	10,498	11,319	14.3	11,794	4.2	11,827	.2
R.I.	713	792	859	20.5	950	10.5	927	-2.4
S.C.	1,900	2,117	2,383	25.4	2,591	8.7	2,818	8.8
S.D.	643	953	681	5.8	666	-2.1	683	2.6
Tenn	2,916	3,292	3,567	22.3	3,924	10.0	4,188	6.7
Texas	6,415	7,711	9,580	49.3	11,197	16.0	12,237	9.3
Utah	550	689	891	61.8	1,059	18.9	1,206	13.8
Vt.	359	377	390	5.0	445	14.1	471	5.9
Va.	2,678	3,319	3,967	48.1	4,648	17.2	4,967	6.8
Wash.	1,736	2,379	2,853	64.3	3,408	19.5	3,544	3.8
W. Va.	1,902	2,006	1,860	-2.2	1,744	-6.2	1,803	3.4
Wisc.	3,138	3,435	3,951	25.9	4,418	11.8	4,607	4.3
Wyo.	251	291	330	31.6	337	.7	374	12.5
U.S.	131,669	150,697	179,323	36.2	203,212	13.3	213,121	4.8

United States Population

	Total	Urban	Rural
1900	76,212,168	30,214,832	45,997,336
1910	92,228,496	42,064,001	50,164,495
1920	106,021,537	54,253,282	51,768,225
1930	123,202,624	69,160,599	54,042,025
1940	132,164,569	74,705,338	57,459,231
1950	151,325,798	96,846,817	54,478,981
1960	179,323,175	125,268,750	54,054,425
1970	203,211,926	149,324,930	53,886,996

Arkansas Population

	Total	Urban	Rural
1900	1,311,564	111,733	1,199,831
1910	1,574,449	202,681	1,371,768
1920	1,752,204	290,497	1,461,707
1930	1,854,486	382,878	1,471,604
1940	1,949,387	431,910	1,517,477
1950	1,909,511	630,541	1,278,920
1960	1,786,272	765,303	1,020,969
1970	1,923,295	960,865	962,430

NOTE: Urban refers to all people living in towns of 2500 or more people. The rest of the population is classified as rural.

ARKANSAS POPULATIONS: 1950-1975

	1950	1960	1950-60 % Change	1970	1960-70 % Change	1975 Est.	1970-75 % Change
Arkansas	23,665	23,355	-1.3	23,347	-	23,000	-1.3
Ashley	25,660	24,220	-5.6	24,976	3.1	25,100	0.5
Baxter	11,683	9,943	-14.9	15,319	54.1	21,000	37.1
Benton	38,076	36,272	-4.7	50,476	39.2	59,700	18.3
Boone	16,260	16,116	-0.9	19,073	18.3	22,400	17.5
Bradley	15,987	14,029	-12.2	12,778	-8.9	12,600	-1.8
Calhoun	7,132	5,991	-16.0	5,573	-7.0	5,600	0.1
Carroll	13,244	11,284	-14.8	12,301	9.0	14,000	14.2
Chicot	22,306	18,990	-14.9	18,164	-4.3	18,000	-1.1
Clark	22,998	20,950	-8.9	21,537	2.8	21,900	1.9
Clay	26,674	21,258	-20.3	18,771	-11.7	20,000	6.3
Cleburne	11,487	9,059	-21.1	10,349	14.2	13,900	34.7
Cleveland	8,956	6,944	-22.5	6,605	-4.9	6,900	4.4
Columbia	28,770	26,400	-8.2	25,952	-1.7	25,900	-0.2
Conway	18,137	15,430	-14.9	16,805	8.9	17,700	5.2
Craighead	50,613	47,303	-6.5	52,068	10.1	59,400	14.1
Crawford	22,727	21,318	-6.2	25,677	20.4	30,300	18.2
Crittenden	47,184	47,564	0.8	48,106	1.1	50,400	4.7
Cross	24,757	19,551	-21.0	19,783	1.2	19,400	-2.0
Dallas	12,416	10,522	-15.3	10,022	-4.8	10,300	2.8

ARKANSAS POPULATIONS: page 2

	1950	1960	1950-60 % Change	1970	1960-70 % Change	1975 Est.	1970-75 % Change
Desha	25,155	20,770	-17.4	18,761	-9.7	18,300	-2.7
Drew	17,959	15,213	-15.3	15,157	-0.4	15,500	2.5
Faulkner	25,289	24,303	-3.9	31,572	29.9	38,500	21.8
Franklin	12,358	10,213	-17.4	11,301	10.7	12,000	6.4
Fulton	9,187	6,657	-27.5	7,699	15.7	8,800	14.7
Garland	47,102	46,697	-0.9	54,131	15.9	61,700	13.9
Grant	9,024	8,294	-8.1	9,711	17.1	11,900	23.0
Greene	29,149	25,198	-13.6	24,765	-1.7	28,800	16.4
Hempstead	25,080	19,661	-21.6	19,308	-1.8	20,000	3.7
Hot Springs	22,181	21,893	-1.3	21,963	0.3	23,700	7.7
Howard	13,342	10,878	-18.5	11,412	4.9	13,100	14.9
Independence	23,488	20,048	-14.6	22,723	13.3	23,600	3.8
Izard	9,953	6,766	-32.0	7,381	9.1	9,400	28.0
Jackson	25,912	22,843	-11.8	20,452	-10.5	21,700	6.1
Jefferson	76,075	81,373	7.0	85,329	4.9	83,700	-2.0
Johnson	16,138	12,421	-23.0	13,630	9.7	15,600	14.7
Lafayette	13,203	11,030	-16.5	10,018	-9.2	9,400	-6.5
Lawrence	21,303	17,267	-18.9	16,320	-5.5	18,500	13.4
Lee	24,322	21,001	-13.7	18,884	-10.1	17,600	-6.7
Lincoln	17,079	14,447	-15.4	12,913	-10.6	13,000	1.0
Little River	11,690	9,211	-21.2	11,194	21.5	11,700	4.3
Logan	20,260	15,957	-21.2	16,789	5.2	18,100	7.8
Lonoke	27,278	24,551	-10.0	26,249	6.9	30,900	17.7
Madison	11,734	9,068	-22.7	9,453	4.2	10,100	6.3
Marion	8,609	6,041	-29.8	7,000	15.9	9,100	30.5
Miller	32,614	31,686	-2.8	33,385	5.4	33,400	-0.1
Mississippi	82,375	70,174	-14.8	62,060	-11.6	61,500	-0.9
Monroe	19,540	17,327	-11.3	15,657	-9.6	15,200	-2.7
Montgomery	6,680	5,370	-19.6	5,821	8.4	6,500	11.4
Nevada	14,781	10,700	-27.6	10,111	-5.5	10,300	2.1
Newton	8,685	5,963	-31.3	5,844	-2.0	6,800	16.0
Ouachita	33,051	31,641	-4.3	30,896	-2.4	29,800	-3.5
Perry	5,978	4,927	-17.6	5,634	14.3	7,000	23.8
Phillips	46,254	43,997	-4.9	40,046	-9.0	38,100	-4.9
Pike	10,032	7,864	-21.6	8,711	10.8	9,700	11.5
Poinsett	39,311	30,834	-21.6	26,822	-13.0	27,600	2.8
Polk	14,182	11,981	-15.5	13,297	11.0	14,800	11.3
Pope	23,291	21,177	-9.1	28,607	35.1	34,100	19.2
Prairie	13,768	10,515	-23.6	10,249	-2.5	9,900	-3.1
Pulaski	196,685	242,980	23.5	287,189	18.2	324,200	12.9
Randolph	15,982	12,520	-21.7	12,645	1.0	16,200	28.0
St. Frances	36,841	33,303	-9.6	30,799	-7.5	31,000	0.6
Saline	23,816	28,956	21.6	36,107	24.7	43,000	19.2
Scott	10,057	7,297	-27.4	8,207	12.5	9,300	13.2
Searcy	10,424	8,124	-22.1	7,731	-4.8	8,200	6.5
Sebastian	64,202	66,685	3.9	79,237	18.8	109,500	38.2
Sevier	12,293	10,156	-17.4	11,272	11.0	12,400	10.4
Sharp	8,999	6,319	-29.8	8,233	30.3	10,600	28.8
Stone	7,662	6,294	-17.9	6,838	8.6	8,100	18.0

ARKANSAS POPULATION: page 3

	1950	1960	1950-60 % Change	1970	1960-70 % Change	1975 Est.	1970-75 % Change
Union	49,686	49,518	-0.3	45,428	-8.3	44,300	-2.6
Van Buren	9,687	7,228	-25.4	8,275	14.5	9,800	18.3
Washington	49,979	55,797	11.6	77,370	38.7	89,400	15.5
White	38,040	32,745	-13.9	39,253	19.9	46,200	17.6
Woodruff	18,957	13,954	-26.4	11,566	-17.1	10,100	-12.5
Yell	14,057	11,940	-15.1	14,208	19.0	16,600	16.8

TOWNSHIP POPULATION CHANGES
1950-1970

Arkansas County

Township	1950	1960	%	1970	%
Arkansas	419	301	-28.2	163	-45.0
Barton	611	372	-39.1	232	-37.6
Bayou Meto	681	538	-21.0	450	-16.4
Brewer	262	142	-45.8	113	-20.4
Chester	706	481	-31.9	430	-10.6
Crockett	474	355	-25.1	257	-27.6
Garland	459	445	-3.1	328	-26.3
Gum Pond	8,041	10,024	24.7	10,940	9.1
Henton	1,005	713	-29.0	685	-2.5
Keaton	1,559	1,143	-26.7	1,021	-10.7
La Gure	4,319	4,522	4.7	5,080	12.3
McFall	386	280	-27.5	238	-15.0
Mill Bayou	759	777	2.4	623	-19.8
Morris	434	435	.2	369	-15.2
Point de Luce	587	365	-37.8	269	-26.3
Prairie	1,923	1,556	-19.1	1,147	-26.3
Stanley	1,040	906	-12.9	992	9.5

Marion County

Township	1950	1960	%	1970	%
Bearden	76	30	-60.5	41	-36.7
Big Creek	10	--	-100.0	4	-18.4
Blythe	670	423	-36.9	388	-8.3
Buffalo	55	29	-47.3	14	-51.7
Cedar Creek	79	17	-78.5	26	-52.9
Crockett	108	49	-54.6	59	20.4
Crooked Creek	209	84	-59.8	110	31.0
De Soto	289	154	-46.7	120	-22.1
Dodd City	210	136	-35.2	115	-15.4
Franklin	204	169	-17.2	220	-30.2
Hampton	301	245	-18.6	233	-4.9
Independence	45	200	344.4	160	-20.0
James Creek	631	570	-9.7	821	44.0
Jefferson	191	29	-84.8	34	17.2
Big Spring	170	87	-48.8	71	-18.4

TOWNSHIP POPULATION CHANGES: Page 2

Marion County Cont.

Township	1950	1960	%	1970	%
Joe Burleson	276	199	-27.4	199	0.0
Keesee	63	52	-17.9	76	46.2
Keeter	163	84	48.5	88	4.7
Liberty	184	68	-63.0	79	16.2
North Fork	311	262	-15.8	292	11.5
Prairie	433	325	-24.9	267	-17.8
Sugar Loaf	253	178	-29.6	204	14.6
Summit	698	511	-26.5	592	15.9
Union	936	781	-16.6	1,047	34.1
Water Creek	335	261	-22.1	374	43.3
White River	1,712	1,098	-35.9	1,366	24.4

Sebastian County

Township	1950	1960	%	1970	%
Bass Little	615	471	-23.4	477	1.3
Beverly	433	322	-25.6	386	19.8
Big Creek	1,033	939	-9.1	1,324	41.0
Bloomer	429	439	2.3	474	8.0
Center	2,155	1,863	-13.5	2,444	31.1
Cole	974	676	-30.5	908	34.3
Dayton	477	333	-30.1	369	10.8
Diamond	1,151	898	-21.9	932	3.8
Hartford	1,247	757	-39.3	860	13.6
Island	301	227	-24.6	255	12.3
Jim Fork	718	490	-31.8	562	14.7
Lon Norris	951	1,555	63.5	985	-36.7
Marion	989	753	-23.9	1,141	51.5
Mississippi	368	242	-34.2	348	43.8
Mont Sandals	1,324	1,320	-0.3	2,044	54.8
Prairie	470	282	40.0	358	27.0
Rogers	627	544	-13.2	618	13.6
Sugarloaf	1,138	932	-18.1	1,057	13.4
Upper	48,103	53,180	10.6	63,312	19.1
Washburn	280	210	-25.0	229	9.0
White Oak	186	149	-19.9	154	3.4

AGE AND SEX STRUCTURES

United States

Age	1950 Male	%	1950 Female	%	1970 Male	%	1970 Female	%
0-4	8,276,952	5.5	7,966,189	5.3	8,745,499	4.3	8,408,838	4.1
5-9	6,746,568	4.5	6,515,555	4.3	10,169,496	5.0	9,787,751	4.8
10-14	5,684,922	3.8	5,482,556	3.6	10,590,737	5.2	10,198,771	5.0
15-19	5,346,290	3.5	5,329,031	3.5	9,633,847	4.7	9,436,501	4.6
20-24	5,646,699	3.7	5,902,656	3.9	7,917,269	3.9	8,453,756	4.2
25-29	6,006,520	4.0	6,299,431	4.2	6,621,567	3.3	6,855,426	3.4
30-34	5,655,538	3.7	5,916,799	3.9	5,595,790	2.8	5,834,646	2.9
35-39	5,546,565	3.7	5,747,913	3.8	5,412,423	2.7	5,694,428	2.8
40-44	5,093,005	3.4	5,147,666	3.4	5,818,813	2.9	6,162,141	3.0
45-49	4,545,606	3.0	4,566,172	3.0	5,851,334	2.9	6,264,605	3.1
50-54	4,142,277	2.7	4,153,303	2.7	5,347,916	2.6	5,756,102	2.8
55-59	3,639,761	2.4	3,612,763	2.4	4,765,821	2.3	5,207,207	2.6
60-64	3,047,212	2.0	3,027,151	2.0	4,026,972	2.0	4,589,812	2.3
65-69	2,431,035	1.6	2,582,455	1.7	3,122,084	1.5	3,869,541	1.9
70-74	1,633,382	1.1	1,785,826	1.2	2,315,000	1.1	3,128,831	1.5
75-84	1,506,756	1.0	1,770,995	1.2	2,436,245	1.2	3,682,900	1.8
85 & over	236,828	.2	340,073	.2	542,397	.3	960,522	.5

Arkansas State

Age	1950 Male	%	1950 Female	%	1970 Male	%	1970 Female	%
0-4	115,827	6.1	112,452	5.9	80,564	4.2	77,486	4.0
5-9	102,665	5.4	99,398	5.2	94, 844	4.9	91,809	4.8
10-14	91,546	4.8	87,934	4.6	99,819	5.2	96,314	5.0
15-19	79,188	4.1	80,577	4.2	91,678	4.8	90,514	4.7
20-24	64,287	3.4	70,515	3.7	68,431	3.6	74,608	3.9
25-29	62,901	3.3	68,181	3.6	56,563	2.9	59,225	3.1
30-34	59,982	3.1	64,727	3.4	47,889	2.5	51,095	2.7
35-39	62,902	3.3	66,170	3.5	45,442	2.4	50,539	2.6
40-44	59,514	3.1	61,366	3.2	48,255	2.5	53,465	2.8
45-49	53,297	2.8	54,718	2.9	49,637	2.6	54,754	2.8
50-54	45,962	2.4	48,851	2.6	49,398	2.6	54,223	2.8
55-59	42,470	2.2	40,674	2.1	48,320	2.5	53,258	2.8
60-64	33,925	1.8	32,482	1.7	45,320	2.4	51,076	2.7
65-69	32,781	1.7	30,984	1.6	38,701	2.0	45,706	2.4
70-74	21,475	1.1	19,814	1.0	28,242	1.5	33,966	1.8
75-84	20,060	1.1	18,896	1.0	31,570	1.6	40,766	2.1
85 & Over	2,752	.1	3,283	.2	7,627	.4	11,182	.6

COUNTY POPULATION AGE & SEX STRUCTURES

Arkansas

Age	1950 Male	%	1950 Female	%	1970 Male	%	1970 Female	%
0-4	1,524	6.4	1,474	6.2	1,032	4.4	1,027	4.4
5-9	1,232	5.2	1,219	5.2	1,129	4.8	1,145	4.9
10-14	1,134	4.8	1,109	4.7	1,271	5.4	1,215	5.2
15-19	960	4.1	964	4.1	1,103	4.7	1,101	4.7
20-24	747	3.2	880	3.7	694	3.0	780	3.3
25-29	831	3.5	855	3.6	683	2.9	647	2.8
30-34	762	3.2	859	3.6	569	2.4	580	2.5
35-39	821	3.5	800	3.4	525	2.2	633	2.7
40-44	738	3.1	710	3.0	627	2.7	649	2.8
45-49	645	2.7	670	2.8	637	2.7	704	3.0
50-54	643	2.7	552	2.3	614	2.6	693	3.0
55-59	541	2.3	504	2.1	630	2.7	620	2.7
60-64	451	1.9	393	1.7	533	2.3	579	2.5
65-69	360	1.5	328	1.4	435	1.9	546	2.3
70-74	232	1.0	205	.9	386	1.7	375	1.6
75-84	238	1.0	206	.9	414	1.8	543	2.3
85 & Over	35	.1	43	.2	77	.3	151	.6

Marion

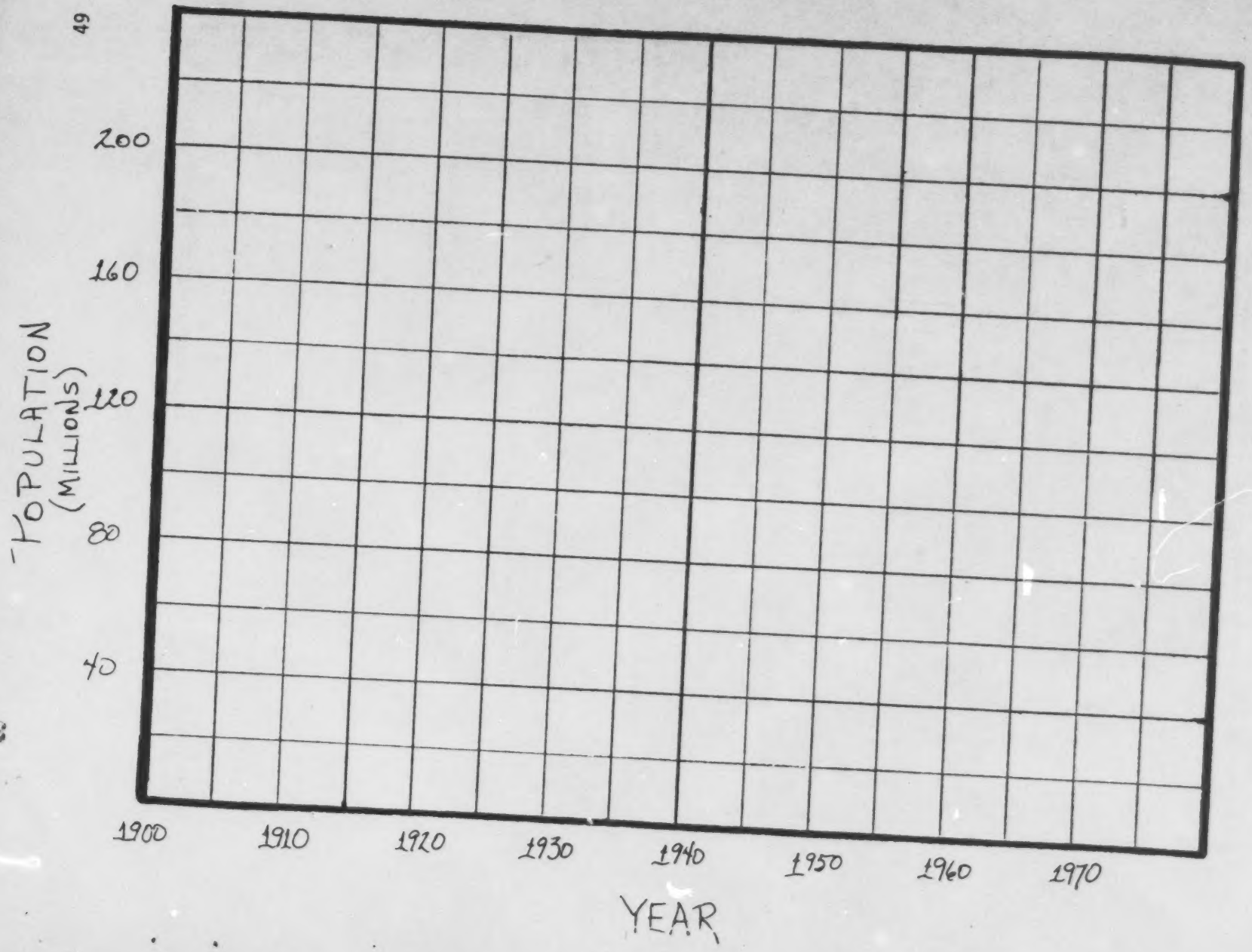
Age	1950 Male	%	1950 Female	%	1970 Male	%	1970 Female	%
0-4	526	6.1	489	5.7	237	3.4	207	3.0
5-9	517	6.0	443	5.1	275	3.9	243	3.5
10-14	424	4.9	416	4.8	287	4.1	281	4.0
15-19	334	3.9	339	3.9	259	3.7	241	3.4
20-24	270	3.1	271	3.1	158	2.3	186	2.7
25-29	284	3.3	318	3.7	164	2.3	164	2.3
30-34	282	3.3	291	3.4	130	1.9	138	2.0
35-39	296	3.4	255	3.0	119	1.7	160	2.3
40-44	278	3.2	271	3.1	172	3.5	192	2.7
45-49	242	2.8	216	2.5	203	2.9	236	3.4
50-54	213	2.5	208	2.4	227	3.2	226	3.2
55-59	192	2.2	178	2.1	239	3.4	275	3.9
60-64	183	2.1	157	1.8	291	4.2	307	4.4
65-69	163	1.9	121	1.4	256	3.7	254	3.6
70-74	119	1.4	78	.9	197	2.8	198	2.8
75-84	114	1.3	95	1.1	189	2.7	204	2.9
85 & Over	12	.1	14	.2	30	.4	55	.8

COUNTY POPULATION AGE & SEX STRUCTURE: Page 2

Sebastian

	1950				1970			
Age	Male	%	Female	%	Male	%	Female	%
0-4	3,706	5.8	3,437	5.4	3,461	4.4	3,355	4.2
5-9	3,304	5.1	2,993	4.7	3,952	5.0	3,835	4.8
10-14	2,594	4.0	2,461	3.8	3,911	4.9	3,778	4.8
15-19	2,031	3.0	2,378	3.7	3,287	4.1	3,454	4.4
20-24	1,901	3.0	2,522	3.9	2,474	3.1	3,154	4.0
25-29	2,214	3.4	2,594	4.0	2,607	3.3	2,727	3.4
30-34	2,305	3.6	2,558	4.0	2,141	2.7	2,347	3.0
35-39	2,340	3.6	2,496	3.9	1,965	2.5	2,126	2.7
40-44	2,092	3.3	2,268	3.5	2,118	2.7	2,293	2.9
45-49	1,821	2.8	1,961	3.1	2,243	2.8	2,569	3.2
50-54	1,549	2.4	1,749	2.7	2,317	2.9	2,370	3.0
55-59	1,460	2.3	1,610	2.5	1,978	2.7	2,178	2.7
60-64	1,176	1.8	1,282	2.0	1,676	2.1	2,067	2.6
65-69	1,035	1.6	1,188	1.9	1,256	1.6	1,768	2.2
70-74	697	1.1	756	1.2	927	1.2	1,372	1.7
75-84	685	.2	814	.2	1,066	1.3	717	2.2
85 & Over	83	.2	142	.2	242	.3	506	.6

U.S. POPULATION



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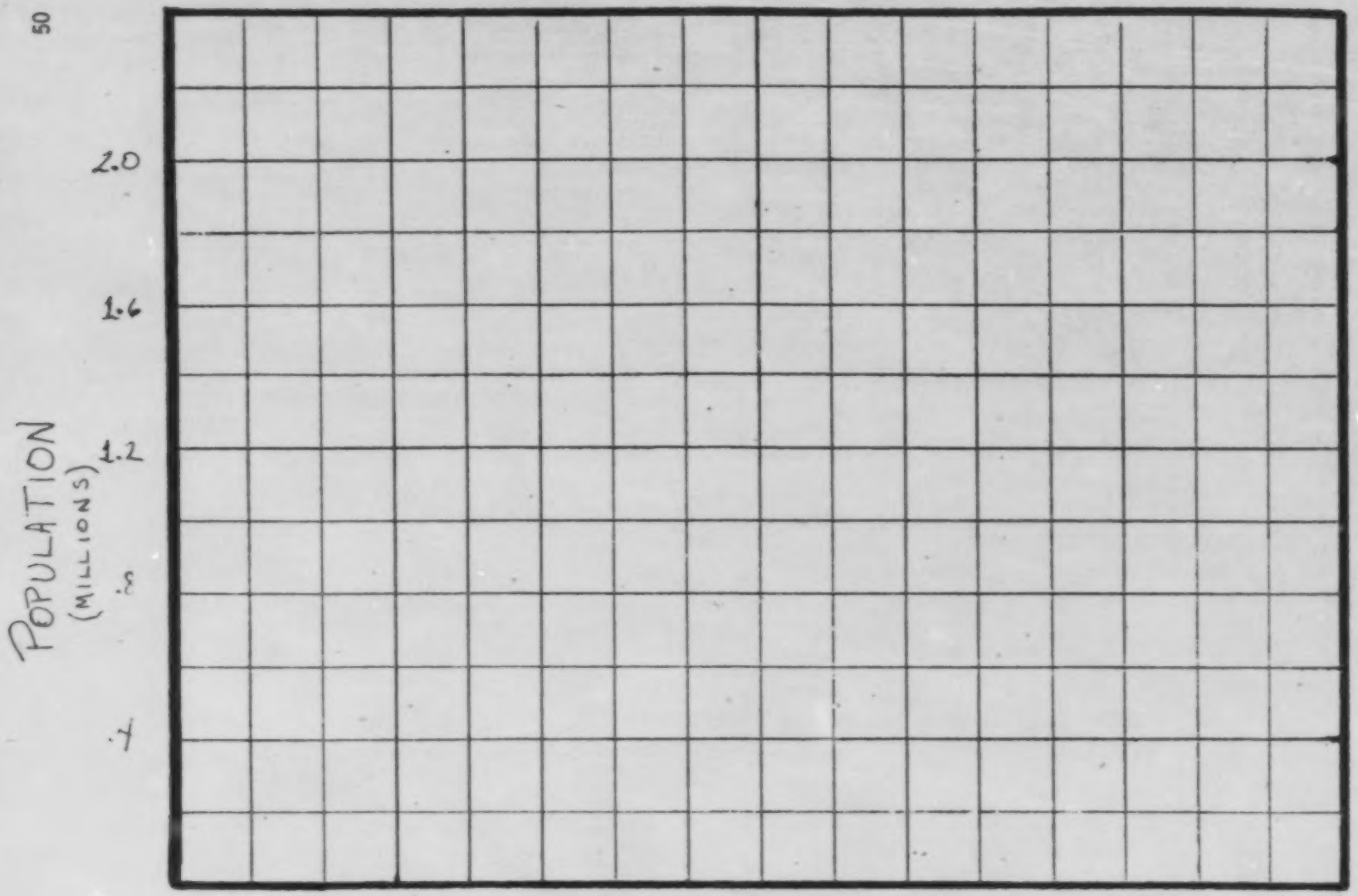
ARKANSAS POPULATION



51
57
58
HAWAII
ALASKA
UNITED STATES

52

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53

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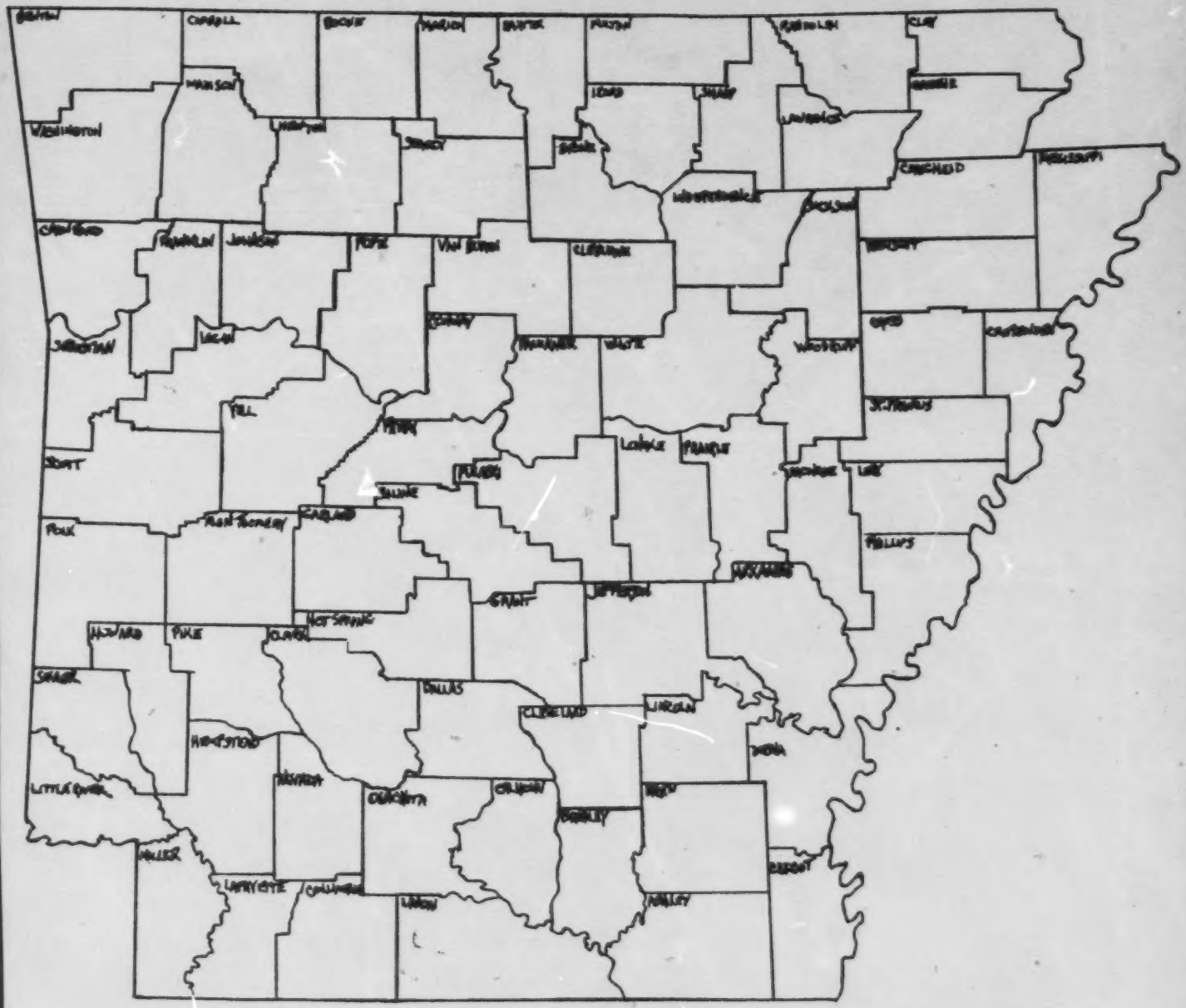
62



CRAWFORD
FRANKLIN
JOHNSON
POPE
VAN BUREN
CLEBURNE
CONWAY
FAULKNER
WHITE
WOODRUFF
CRITTENDEN
PERRY
LONOKE
PRAIRIE
SALINE
GARLAND
MONTGOMERY
POLK
HOT SPRING
CLARK
GRANT
JEFFERSON
ARKANSAS
PHILLIPS
HOWARD
PIKE
SEVIER
DALLAS
CLEVELAND
LINCOLN
DESHA
LITTLE RIVER
HEMPSTEAD
NEVADA
OUACHITA
CALHOUN
BRADLEY
CHICOT
MILLER
LAFAYETTE
COLUMBIA
UNION
ASHLEY

ARKANSAS COUNTY, ARKANSAS

SCALE

10 0 10 20 30 MILES

Minor Civil Divisions - Township &

Incorporation Boundaries.

ARKANSAS COUNTY, ARKANSAS

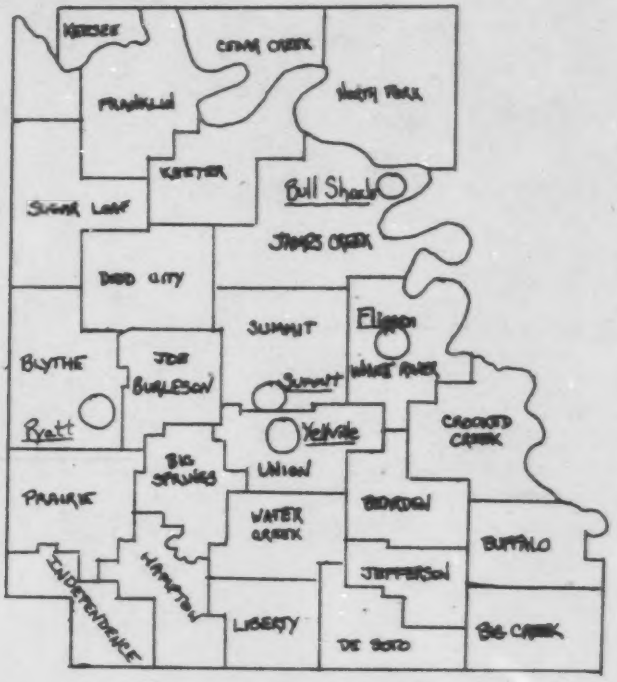
SCALE

10 0 10 20 30 MILES

Minor Civil Divisions - Township ⅛

Incorporation Boundaries.

MARION COUNTY, ARKANSAS



SCALE

10 0 10 20 30 MILES

Minor Civil Divisions — Township & Incorporation Boundaries.

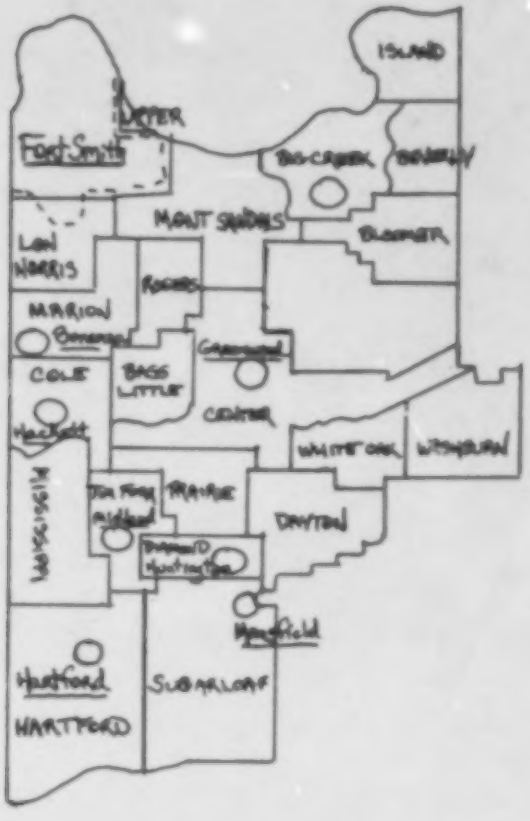
MARION COUNTY, ARKANSAS

SCALE

10 0 10 20 30 MILES

Minor Civil Divisions — Township & Incorporation Boundaries.

SEBASTIAN COUNTY, ARKANSAS



SCALE

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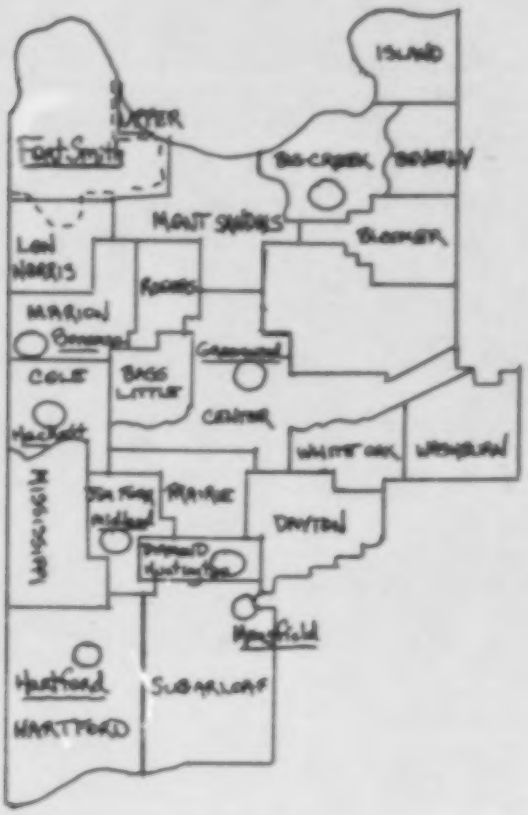
Minor Civil Divisions — Township & incorporation boundaries.

SEBASTIAN COUNTY, ARKANSAS



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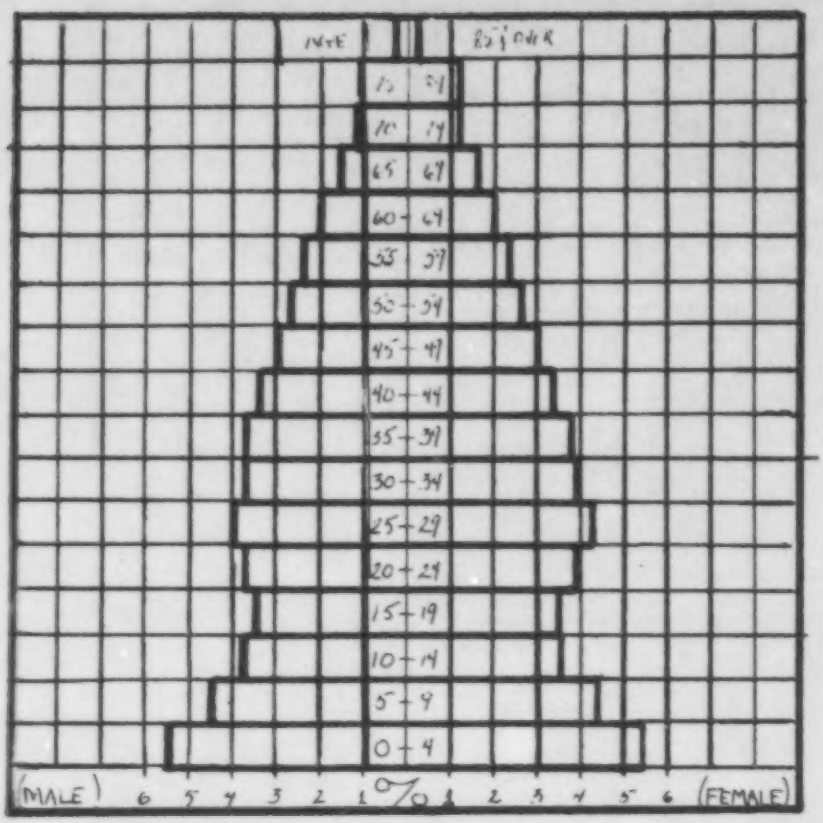
Minor Civil Divisions — Township & incorporation boundaries.

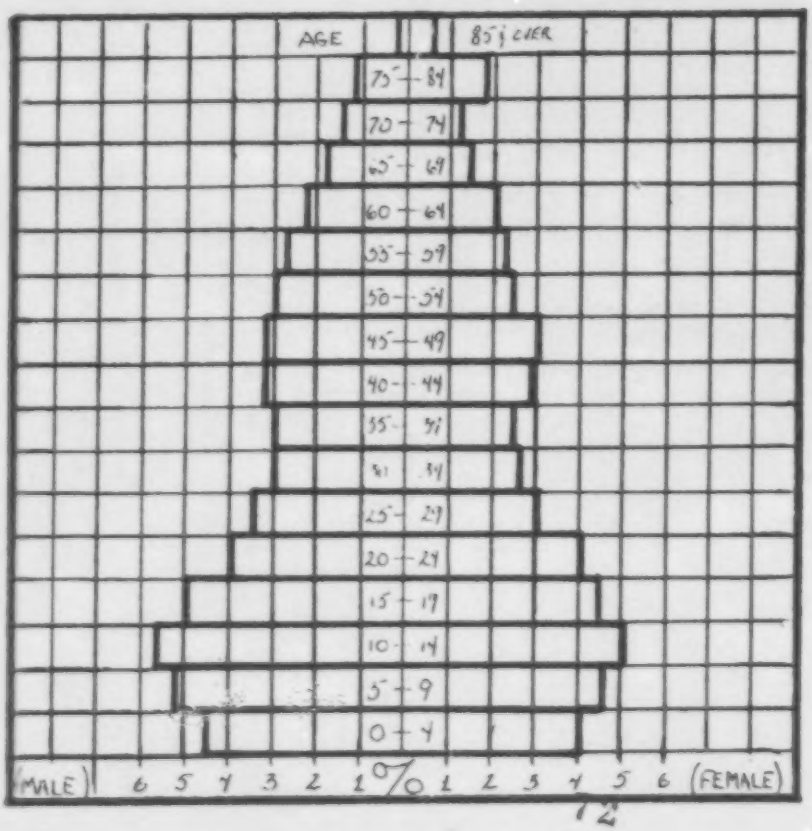
UNITED STATES



1950

BORN

BEFORE 1810
1811 - 15
1816 - 20
1821 - 25
1826 - 30
1831 - 35
1836 - 40
1841 - 45
1846 - 50



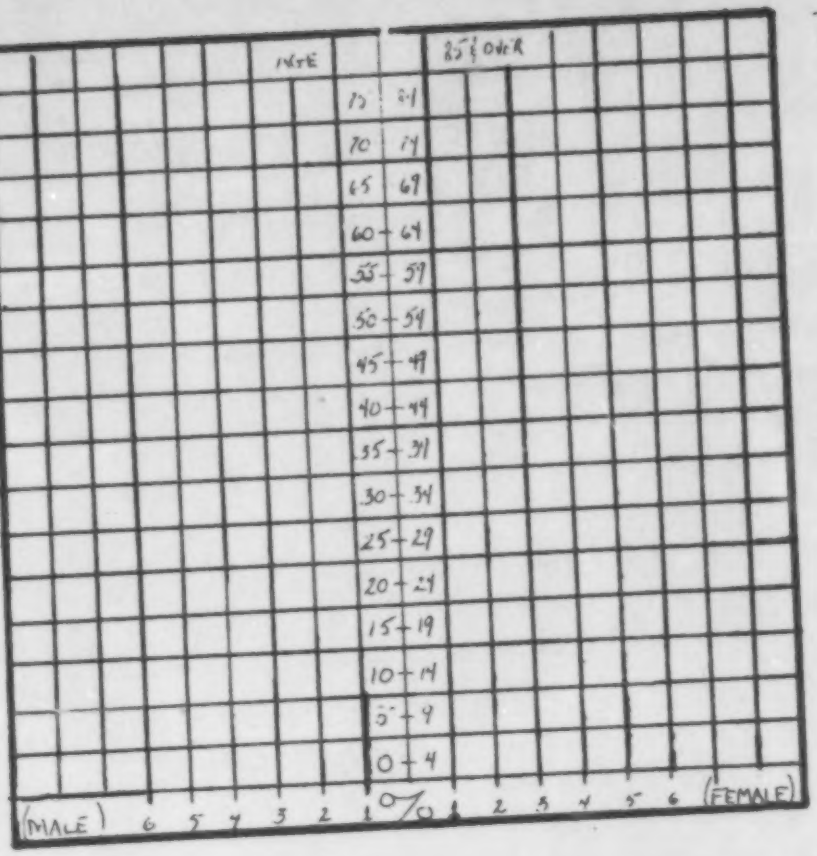
1970

BORN

BEFORE 1810
1891 - 95
1896 - 1900
1901 - 05
1906 - 10
1911 - 15
1916 - 20
1921 - 25
1926 - 30
1931 - 35
1936 - 40
1940 - 45
1946 - 50
1951 - 55
1956 - 60
1961 - 65
1966 - 70

STATE OF ARK.

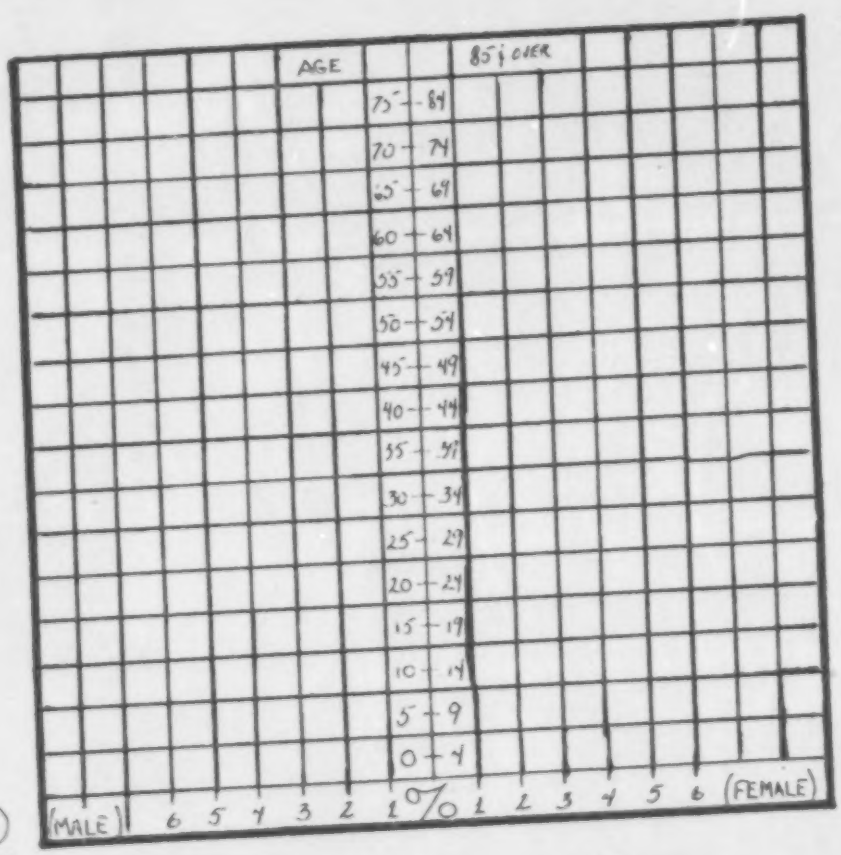
1950



BORN 64

BEFORE 1870
1871-'75
1876-'80
1881-'85
1886-'90
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1941-'45
1946-'50

1970

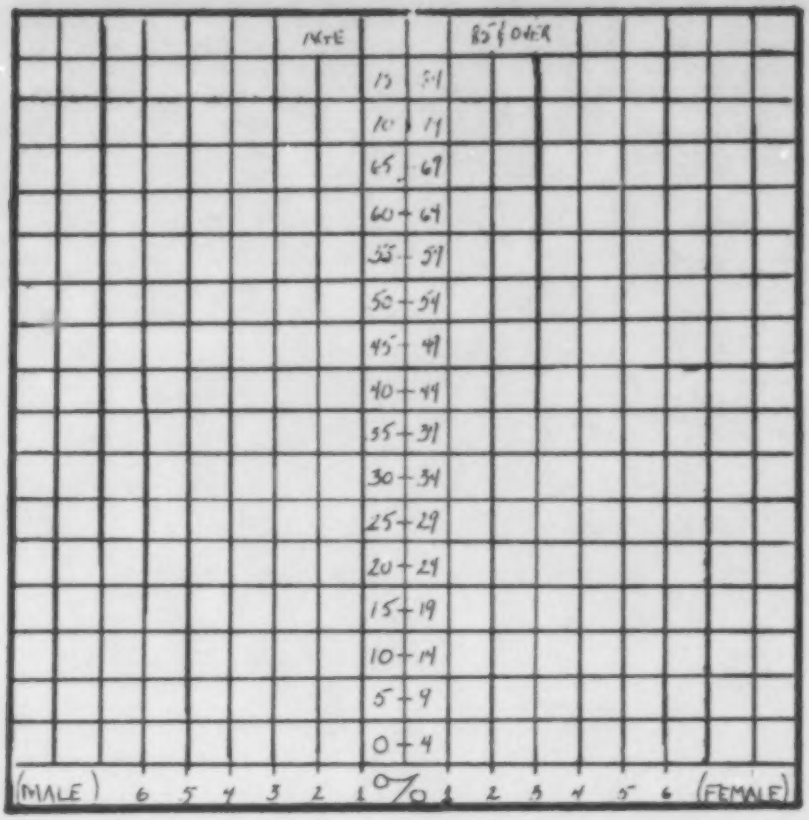


BORN

BEFORE 1810
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1940-'45
1946-'50
1951-'55
1956-'60
1961-'65
1966-'70

ARKANSAS COUNTY

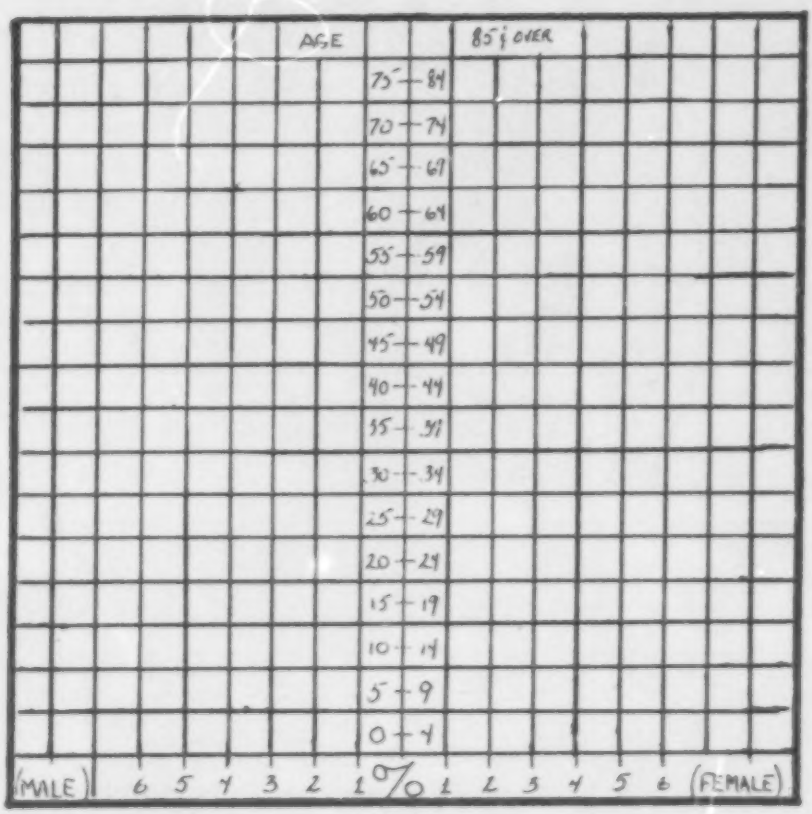
1950



BORN

BEFORE 1810
1811-'15
1816-'20
1821-'25
1826-'30
1831-'35
1836-'40
1841-'45
1846-'50

1970

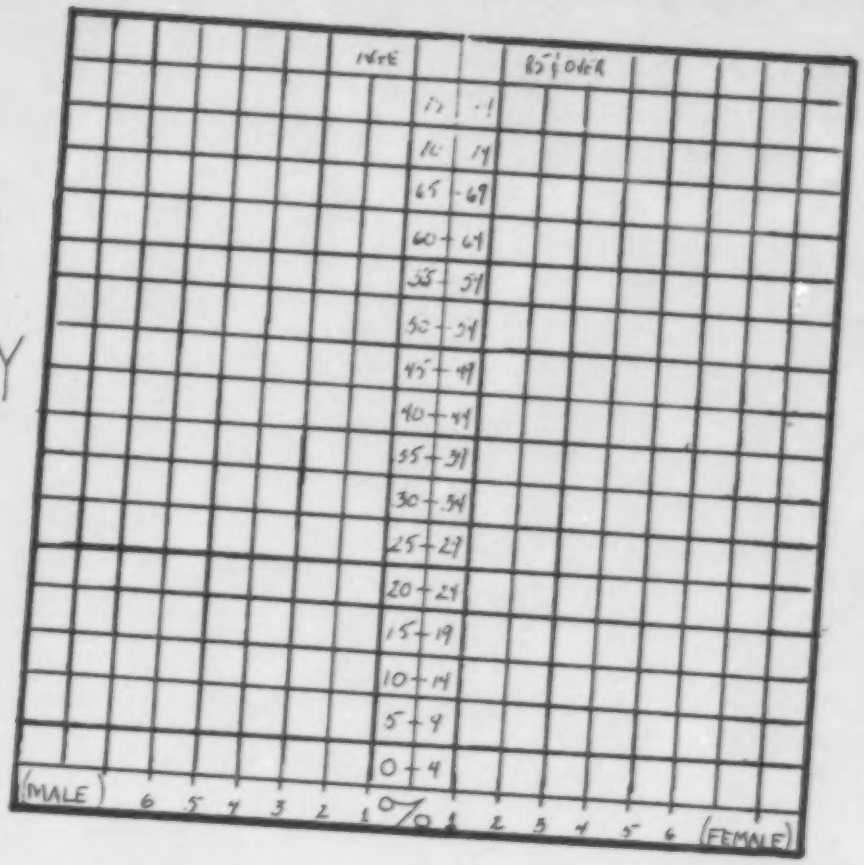


BORN

BEFORE 1810
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1940-'45
1946-'50
1950-'55
1956-'60
1961-'65
1966-'70

MARION COUNTY

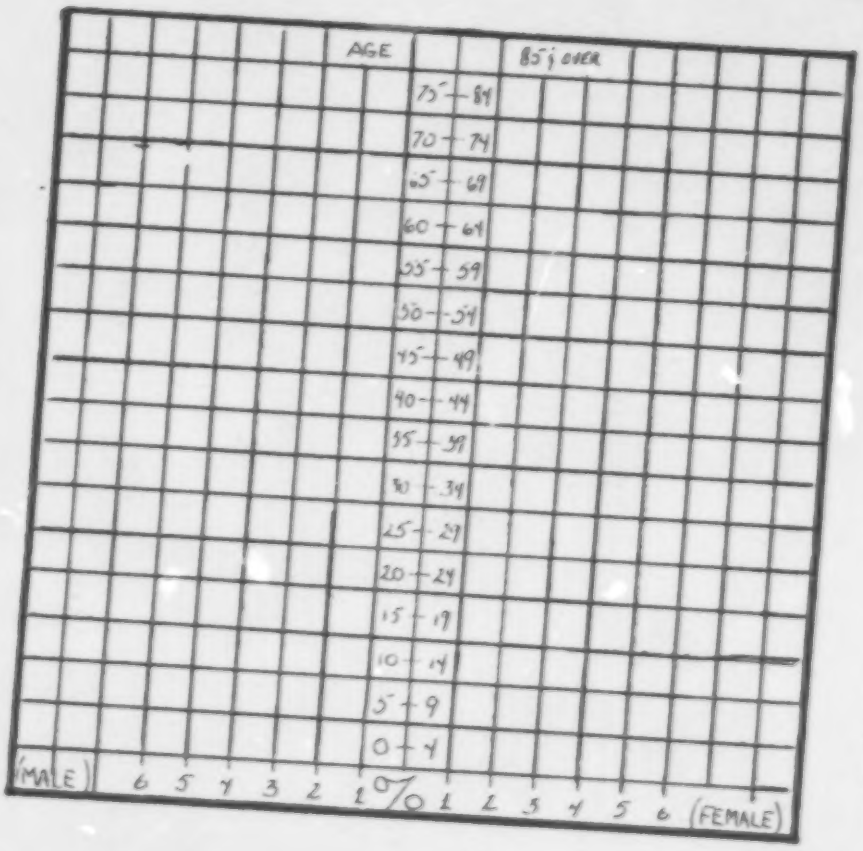
1950



BORN

BEFORE 1810
1811-'15
1816-'20
1821-'25
1826-'30
1831-'35
1836-'40
1841-'45
1846-'50

1970

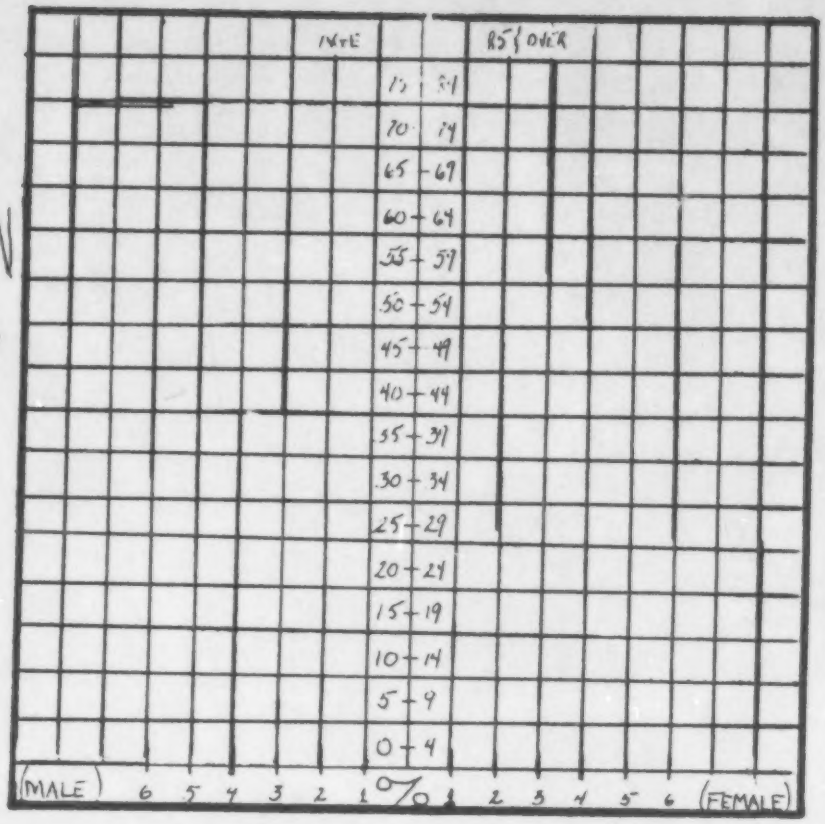


BORN

BEFORE 1810
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1940-'45
1946-'50
1950-'55
1956-'60
1961-'65
1966-'70

SEBASTIAN COUNTY

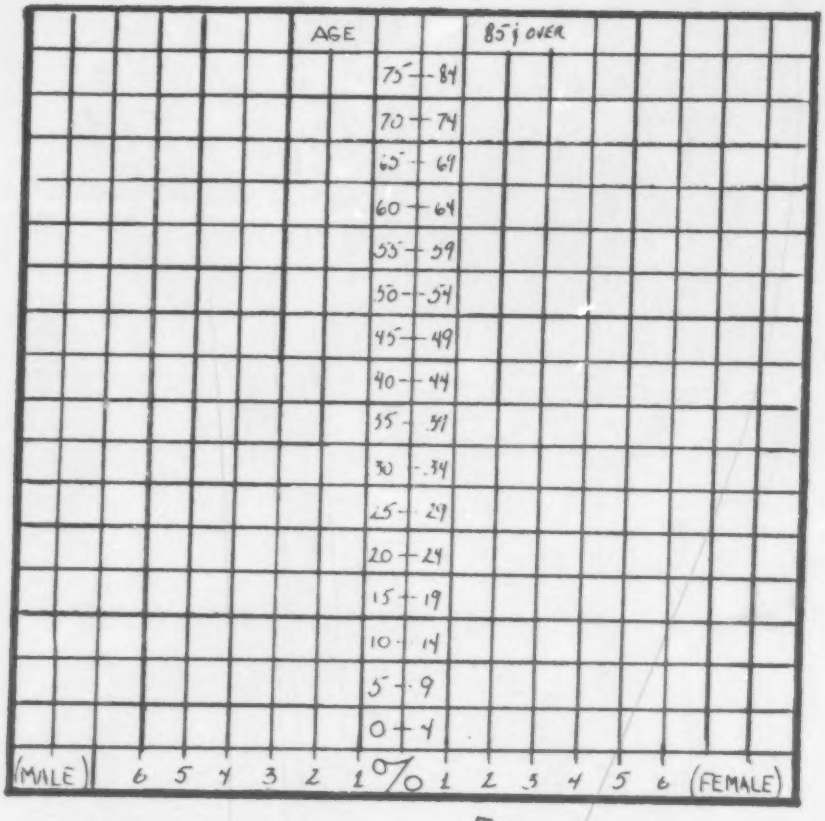
1950



BORN 67

BEFORE 1870
1871-'75
1876-'80
1881-'85
1886-'90
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1941-'45
1946-'50

1970



BORN

BEFORE 1870
1891-'95
1896-1900
1901-'05
1906-'10
1911-'15
1916-'20
1921-'25
1926-'30
1931-'35
1936-'40
1940-'45
1946-'50
1950-'55
1956-'60
1961-'65
1966-'70

CHAPTER 4: DECISION MAKING IN ARKANSAS

As pointed out in the earlier chapters, the people of Arkansas are constantly making economic and environmental decisions. It is almost impossible to make either kind of decision (economic or environmental) without affecting the other area. As a result, we must become better at making decisions so that our state's economy and environment reflect what is best for most people (and for the generations to come).

Two simulation games have been developed for practicing decision making skills. They focus on Arkansas agriculture and manufacturing. The data is the latest available and accurately reflects economic and environmental conditions in Arkansas.

"Locating the FabriTech Company" (Simulation Game)

You are part of a five man management team of a new metal fabricating company. Although you and each of the members of your team have a specific job, you as a group must make the decision about where to locate your factory. A brief description of each member of your management team is given below.

President - Garner Power, age 53, is concerned with all facets of the factory's location and especially concerned with the area having the best long-run prospects for the company.

Sales Manager - George Winn, age 45, is concerned with the largest market location for FabriTech. Thus, he is interested in present market opportunities and good transportation of finished products to this market.

Production Manager - Phil F. Vimm, age 41, is concerned with the production aspects of the company. This includes hiring a productive labor force and minimizing the cost of the raw materials.

Personnel Manager - Stan Dards, age 37, is concerned with the maintenance of an adequate, but inexpensive, labor force. He is also interested in an area attractive to middle and upper management.

Treasurer - Lotti Cash, age 48, is concerned with good financial contacts with adequate amounts of capital. She also feels low corporate taxes are important.

In addition to your special knowledge, each of you is aware of the general nature of production, for the new company. Your factory will be medium-sized with a total employment of about 200 persons. The company will purchase from copper and steel manufacturers and sell to other manufacturers. Your products, steel and copper containers, will be sold to producers of agricultural and industrial chemicals. You are aware that a rather high proportion of the company's employees will have to be skilled workers and that such a labor force is both difficult and expensive.

In previous meetings your management team has decided to locate in Arkansas. To date, you have narrowed the list to the following six cities which all of you agree are likely to provide an adequate supply of workers and specialized suppliers.

El Dorado	Little Rock
Fort Smith	Pine Bluff
Hot Springs	West Memphis

Each area also will be able to provide the services your operation requires, such as rail and truck transportation facilities, and fire and police protection. These six cities are shown on the map at the end of the game.

On the basis of the information provided up to this point, decide among yourselves which role each of you will assume. If there are only four in your group, you can delete any role but the president's. When the roles have been decided, each member of the team should take ten or fifteen minutes to read his role carefully. Although the data presented in the roles are completely accurate, your location choices should not be affected by hypothetical or simplified information.

After reading your role, you select several cities as your location suggestions for the factory. In addition, you should have reasons to support your choices.

As participants you probably will bring to your role information and background that go beyond the limited statement provided in the role description. Feel free to use or share this information as you make your initial choices and subsequently participate in making the group decision. At the same time, you should not attempt to redefine your role.

When you begin your management group meeting, your responsibility will be to help choose the best city in which to locate the factory. Each of you has one vote and a unanimous decision is desirable. The president will serve as group chairman for your thirty-minute management group meeting. After your session, you will come together with the other teams to present and support your decision.

President,Garner Power

You have had a great deal of previous experience while working as a management officer in a competing firm. You are well aware that there are many different factors which must be considered in making a wise choice of location. To ensure the best possible location for your factory, you want all of your management team members to agree on the final choice. Each member, including yourself, has one vote. You may be called upon to support your management decision publicly.

You believe that the firm would be best located at some distance from your competitors, if such a location is otherwise feasible. You think this would tend to ensure a local market, which your competitors

would find difficult to steal away from you. To ship products into the area would cost your competitors more, their service would be slower, and they would not know the territory as well. Conversely, you would be able to serve this local market extremely well, and thus, pick up a larger proportion of its business.

Because of contacts in the industry, you believe that the greatest potential growth in your markets, the basic agricultural and industrial chemical industries, will be in the South and Midwest. Since you are considering the long-range prospects for the company, you think that this factor should be given great weight in locating the factory.

In addition, you are favorably influenced about locating in Arkansas because a number of your relatives, including several grandchildren, live in Springdale.

Sales Manager, George Winn

You are in charge of the sales force of the new company. You have great faith in the quality of your products. You are also confident that your crack salesmen can outsell any of the competitors, no matter what location decision is made. However, you believe that the way to build a strong company is to pick out the best spot to supply the majority of your customers, and then outsell the competition. You believe this because the closer you are to the largest number of customers the better chance you have of outselling the competition. The market in each of the six cities is found on the following table.

MARKET TABLE

Metropolitan Area	Tons of Product Sold Annually
Dallas	1,600
St. Louis	1,500
Tulsa	1,100
New Orleans	1,000
Louisville	800
Kansas City	600

In addition, you believe that an important way to increase profit is to save money in distributing your product. Information about costs of shipping is found in the table, "Total Costs for Shipping the Finished Product to Market Areas." The figures for each city represents the costs of shipping your finished products to the customers.

TOTAL COSTS FOR SHIPPING THE FINISHED PRODUCT TO MARKET AREAS

Metropolitan Area	Product Shipping Costs
New Orleans	$1,500,000
St. Louis	1,500,000
Dallas	1,550,000
Kansas City	1,600,000
Tulsa	1,650,000
Louisville	1,800,000

Another consideration for you in making the location decision is good airline connections, so that you can reach a potential customer quickly. Good airline transportation will enable you and your salesmen to spend more time with your families. Airline connections for each city are listed in the next table.

AIRLINE FLIGHTS PER DAY FOR SELECTED CITIES

Airport	No. of Flights Per Day
Memphis	183
Little Rock	39
Fort Smith	21
El Dorado	3
Hot Springs	8
Pine Bluff	1

Production Manager, Phil F. Vimm

You are in charge of gathering together the necessary materials, primarily finished steel and copper, for the production of the company's chemical containers. You are also responsible for the production processes in the factory.

Your major concern is with the transportation costs of your two major materials--copper and steel. You have noted that all copper suppliers absorb transportation costs and sell at a uniform delivered cost regardless of location. Therefore, your main consideration in choosing a site is the availability of steel at a low cost. The total cost of getting the necessary steel from the nearest source of supply for each city is shown on the following table. Note the economy of shipping raw materials by barge on the Arkansas and Mississippi Rivers.

COSTS OF SHIPPING RAW MATERIALS TO SELECTED ARKANSAS CITIES

Metropolitan Area	Steel Shipping Costs
El Dorado	$244,000
Pine Bluff	151,000
Fort Smith	148,000
Hot Springs	248,000
Little Rock	150,000
West Memphis	152,000

Yourworry is the availability of hardworking and productive labor supply for the plant. You are well aware that Mr. Dards, the Personnel Manager, is most concerned with the wage rates that he must pay for labor. However, you believe his viewpoint is short sighted. You know from actually running a shop that the most important factor is the productivity of the labor force. A more productive labor force will turn out more finished products in a given amount of time than a less productive labor force. You will want to select a city with a high worker productivity, if at all possible.

AVERAGE WORKER PRODUCTIVITY

Metropolitan Area	Productivity Index
El Dorado	$14,138
Fort Smith	15,633
Hot Springs	14,485
Little Rock	15,957
Pine Bluff	23,589
West Memphis	16,470

MEDIAN SCHOOL YEARS COMPLETED BY MALES
33 Years of Age or Older

Metropolitan Area	County	Years
El Dorado	Union	11.4
Fort Smith	Sebastion	12.0
Hot Springs	Garland	10.9
Little Rock	Pulaski	12.3
Pine Bluff	Jefferson	11.1
West Memphis	Crittenden	8.7

You and your chief assistants are anxious to have good schools for your children.

Personnel Manager, Stan Dards

As Personnel Manager you are responsible for assuring an adequate supply of qualified workers available at reasonable cost to operate the factory efficiently. Each city is qualified in terms of anticipated labor costs for your two hundred employees.

However, among these cities, you would prefer to locate in one which does not have too "tight" a labor supply. The right kind of skilled labor needs to be available to hire. In a city with a tight labor supply, you would have difficulty finding workers. You know that productivity is important too, but are suspicious of so-called "productivity indexes" that seem to have no clear monetary meaning. The availability of labor for each city is noted on the "Labor and Costs and Supply Index" that follows.

LABOR COSTS AND SUPPLY INDEX

City	Total Wage Costs	Labor Supply
El Dorado	$1,330,000	B
Fort Smith	1,320,000	B
Hot Springs	1,150,000	A
Little Rock	1,340,000	A
Pine Bluff	1,500,000	C
West Memphis	1,360,000	C

*A Tight
B Moderately tight
C Moderate surplus

Another major consideration for you is a city's attractiveness to middle and upper management personnel. You are aware that the competition for plant managers is becoming fierce. You know that when such people have a choice, they tend to prefer good scenery and a pleasant climate. Air pollution makes a city unpleasant to live in, too. As a father, you also want good schools for your children.

AIR POLLUTION
Days Exceeding Federal Standards

1.	El Dorado	0	4.	Little Rock	1
2.	Fort Smith	259	5.	Pine Bluff	0
3.	Hot Springs	0	6.	West Memphis	4

SCHOOL EXPENDITURES PER PUPIL

City	Amount
El Dorado	$1,064
Fort Smith	918
Hot Springs	1,049
Little Rock	1,282
Pine Bluff	1,032
West Memphis	810

Treasurer, Lotti Cash

As Treasurer of the company, you believe that any good decision requires a long, hard look at the profit picture. Furthermore, you believe that although a long-term profit is nice to dream about, a substantial profit in the short-term is absolutely necessary. You will be most impressed with cities which promise the greatest immediate profit for FabriTech.

In order to increase the new company's chances for short-term profit gains, you propose locating in a city with low taxes. The annual average tax rate in each city is shown on the following table.

PERSONAL TAX RATE FOR VARIOUS CITIES

City	Tax Rate
El Dorado	56.0
Fort Smith	60.7
Hot Springs	39.6
Little Rock	59.7
Pine Bluff	53.9
West Memphis	69.7

You are also aware of the advantages of having good contacts in the banking world. The ability to obtain future financing, if needed, and the ability to invest profitably are enhanced by close contact with the banking interests. Bank deposits are indicated on the table that follows.

BANK DEPOSITS FOR VARIOUS CITIES
(In Thousands)

City	Total Bank Deposits
El Dorado	$2,232,981.6
Fort Smith	854,684.0
Hot Springs	372,871.0
Little Rock	12,708,271.0
Pine Bluff	933,987.4
West Memphis	269,862.2

All members of the management team have the following additional data to consider in making the decision

NUMBER OF FACTORIES IN THE COMMUNITY

City	Number
El Dorado	63
Fort Smith	184
Hot Springs	72
Little Rock	204
Pine Bluff	70
West Memphis	34

AVERAGE FACTORY WAGE (YEARLY)

City	Amount
El Dorado	$6,650
Fort Smith	6,600
Hot Springs	5,750
Little Rock	6,700
Pine Bluff	7,500
West Memphis	6,800

NUMBER OF FACTORY EMPLOYEES

City	Number
El Dorado	3,600
Fort Smith	15,000
Hot Springs	3,500
Little Rock	19,000
Pine Bluff	5,600
West Memphis	1,700

TOTAL LABOR FORCE

City	County	Amount
El Dorado	Union	18,100
Fort Smith	Crawford & Sebastian	60,250
Hot Springs	Garland	21,700
Little Rock	Pulaski & Saline	148,000
Pine Bluff	Jefferson	33,125
West Memphis	Crittenden	15,250

LABOR FORCE
% of unemployed

City	Percentage
El Dorado	4.1
Fort Smith	4.2
Hot Springs	3.9
Little Rock	3.3
Pine Bluff	5.9
West Memphis	5.8

LABOR FORCE
% in Manufacturing

City	Percentage
El Dorado	20.0
Fort Smith	28.1
Hot Springs	15.7
Little Rock	16.4
Pine Bluff	24.0
West Memphis	20.3

MEDIAN FAMILY INCOME

City	Amount
El Dorado	$8,105
Fort Smith	7,975
Hot Springs	6,024
Little Rock	8,785
Pine Bluff	7,411
West Memphis	8,163

HOUSING VACANCIES

City	Percentages
El Dorado	1.9
Fort Smith	2.4
Hot Springs	2.5
Little Rock	2.4
Pine Bluff	2.1
West Memphis	2.0

POSSIBLE LOCATIONS FOR FABRITECH

FARMING GAME

INSTRUCTIONS TO FARMERS: 1940

You will receive a card that gives an outline of the background of a farmer in Arkansas in 1940. You are to assume the role of this farmer. Study the description of the farmer's past experiences and think about the kind of farm he would want.

You have selected an 80 acre farm site and have all the necessary farm equipment. However, you are opening new land to agriculture. The first step is to plan how you will allocate your money. In addition to the farm equipment, you have $2,500 to start your farm but for the purposes of the game you budget $900 of it for the cost of living during the first year. This cost-of-living expense must be set aside each year. You can spend money in $100 units only. The smallest unit of land you can work with is twenty acres.

The crops you can plant include cotton, corn, soybeans. It costs approximately $200 to raise twenty acres of corn; $500 to raise twenty acres of cotton; and $300 to raise soybeans.

You may invest in beef cattle, dairy cattle, sheep, or poultry--chickens or turkeys. If you decide to start a dairy herd, there is an additional expense of $400 for the first year that is not repeated the following years. On any 20 acre tract you may graze from $100 to $400 worth of sheep, beef cattle, or dairy cattle. You may mix your investment in sheep, beef cattle, or dairy cattle on a 40 acre tract, but only terms of $100 units, such as $100 in sheep and $300 in beef cattle. Poultry does not require extra land.

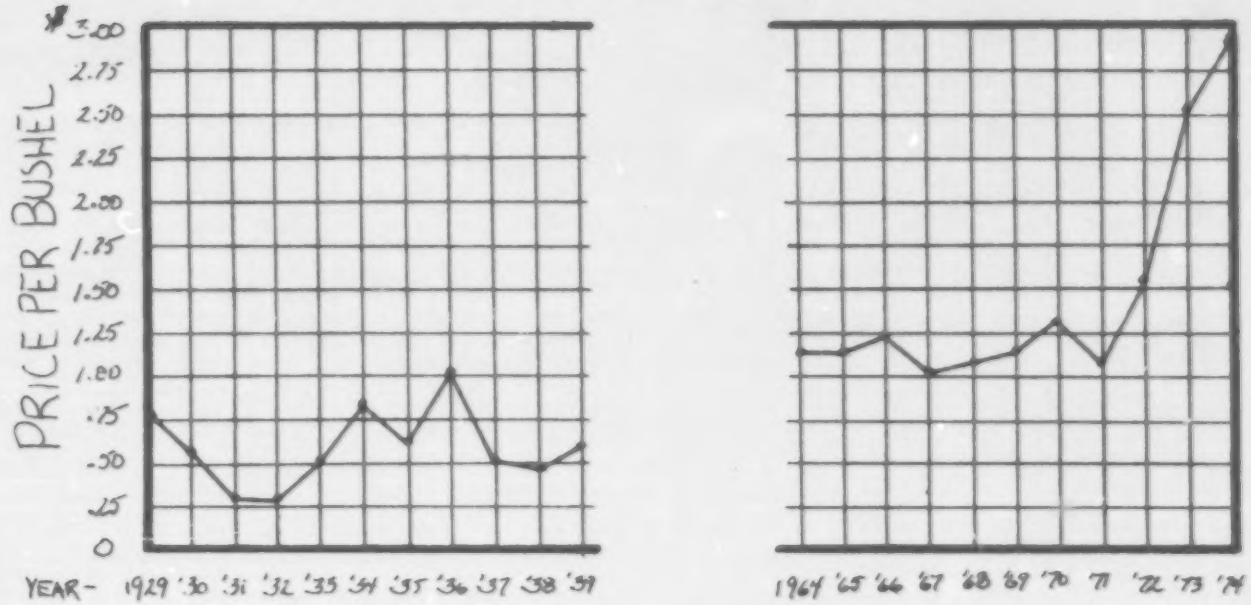
Additional land may be rented for $200 per 20 acre unit. If you do not choose to farm all your land you may rent out some of it to other farmers for $200 per 20 acre unit. The game assumes you can always find someone whose land you can rent or to whom you can rent some of yours. You need not try to rent from or to other students.

All costs, such as taxes, seed, labor, supplies, and maintenance are included in the charges for each of the farming activities.

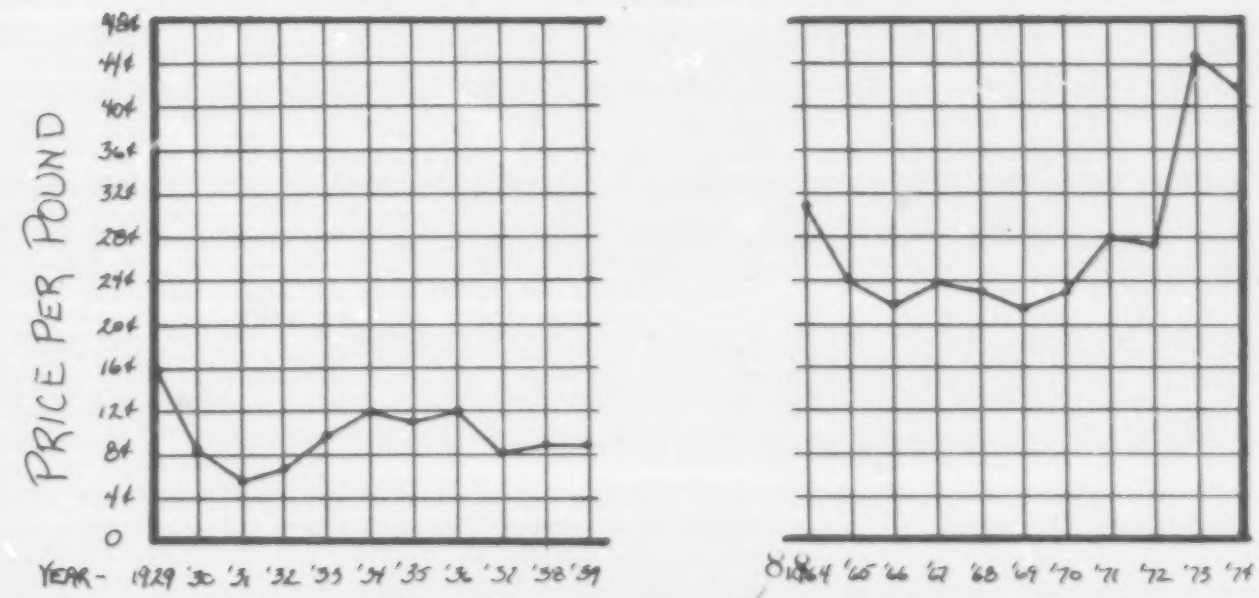
THE GAME BEGINS

Now look at the activity sheet for 1940. Fill in the blank for your background according to the farmer's role you are playing, the year (1940) and the total amount of money you have ($2,500) in the blank next to "Capital." At the left is a list of all the crops and animals you may raise. The list continues with other expenses, including cost of living, as well as a space for savings. Savings earn no interest.

AVERAGE YEARLY CORN PRICES

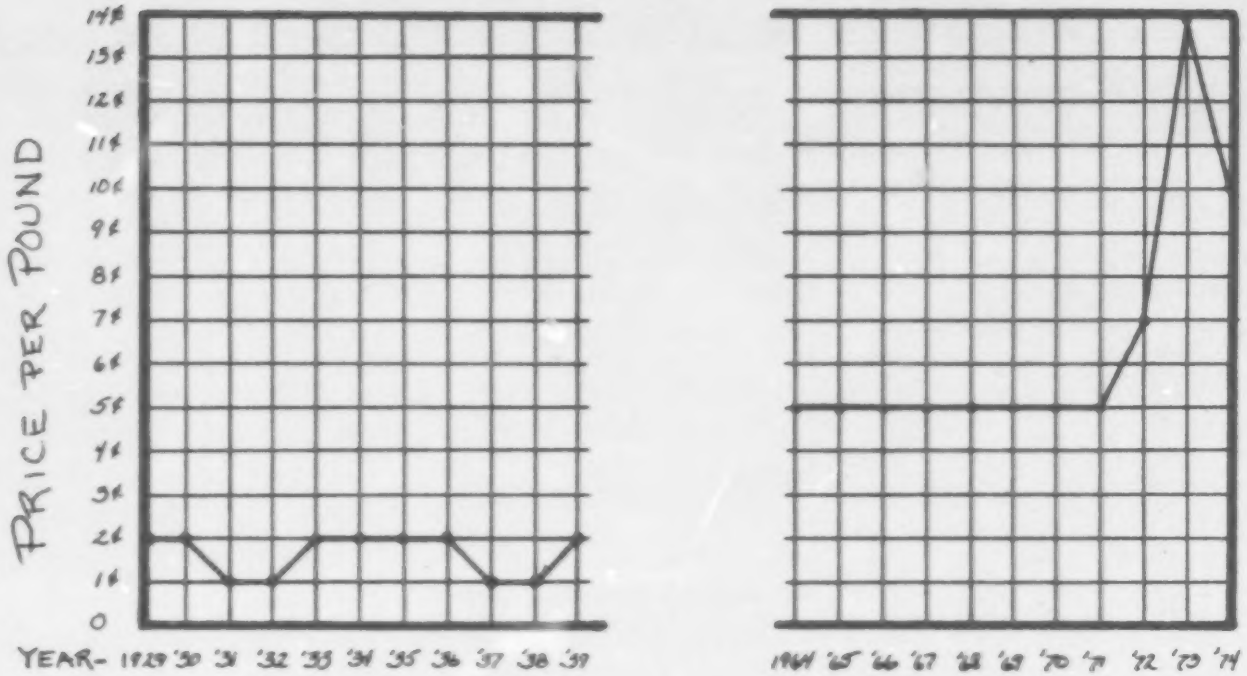


AVERAGE YEARLY COTTON PRICES

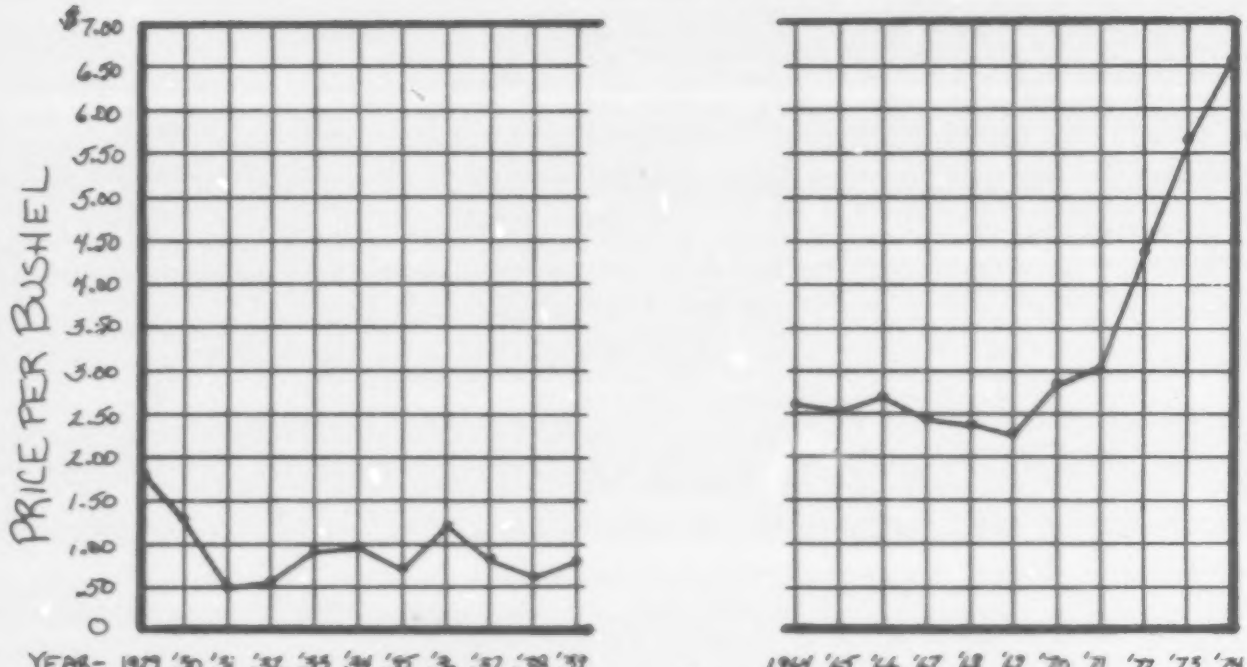


NOTE: MONTHLY PRICES FLUCTUATED EVEN MORE THAN AVERAGE YEARLY PRICES.

AVERAGE YEARLY RICE PRICES



AVERAGE YEARLY SOYBEAN PRICES



NOTE: MONTHLY PRICES FLUCTUATED EVEN MORE THAN AVERAGE YEARLY PRICES.

The first column is titled "Allocation" and it is the only column you will fill in as you plan your farming activities. There is a sketch of your 80 acre farm on the right. The costs for crops, livestock, and rent are also listed on the activity sheet. As you decide how to use each 20 acre square, write the decision or its abbreviation on the map, figure the expense, and write in the amount in the proper blank in the "Allocation" column. For example, if you want to plant corn in one twenty acre area, write corn in one square and put $200 in the blank next to corn in the "Allocation" column. If you want to rent some land, there is another sketch representing land you may rent.

The total you may spend is the figure you have recorded as capital at the top of the sheet. Continue your allocations until you have utilized all your land or capital.

If, after you have made your allocations, you still have cash on hand but no land available, you may invest it in poultry, place it in savings, or rent more land.

FIGURING OUTCOMES

Once you have made your allocations, you are ready to find out how successful your first year's farming operation has been. You will receive an outcome card. On it is a list of crops and livestock with a number printed after each entry. This number is the multiplier. If you planted 20 acres of corn and the outcome card has a 2 after corn, record the 2 in the "Multiplier" column on the activity sheet. Then use this number to multiply the amount recorded in the "Allocation" Column to figure the "Outcome."

	Allocation	Multiplier	Outcome
Corn	$200	2	$400

This operation should be repeated for each of the crops or animals you have chosen to raise.

Notice that the cost of living and rent are multiplied by 0 and savings by 1.

After you have figured each individual outcome and placed the amount in the "Outcome" column, total this column. The difference between this total and $2,500 is the net profit or loss for the year. Be sure to record the total of the "Outcome" column as the capital you have to work with on the 1975 activity sheet.

Be sure to read the introductory paragraph on your outcome card to find out why some of your investments failed and others were successful. You will have a chance to discuss outcomes with other members of your class.

You are now ready to make your allocations for 1975. Base your decisions as to what crops and animals you will raise not only on your past experience but also on what you have learned during the first year's farming.

THE GAME FOR 1975

You have purchased an additional 240 acres and you now must make mortgage payments. You have also purchased a tractor and other machinery. Your payments for indebtedness on land and machinery amount to $1,000 per year.

The prices you have been receiving for agricultural products are high, but your expenditures are also greater than ever. Your living costs have risen to $4,000 per year. You do have a greater amount of capital, however, and you go into the 1975 period with $12,500.

Your farm now totals 320 acres and you must hire one laborer. His salary is $1,800 plus room and board. Many of your neighbors have expanded their operations by renting land. You may rent land at $800 for 30 acres. This fee includes the cost of additional labor necessary for expanding your operation.

The activity sheet shows the cost of production for each crop or livestock choice. You have the option to plant unirrigated crops of cotton, corn, or soybeans or irrigated crops of rice.

If you decide to plant irrigated crops, you must pay an additional $200 the first year, which represents the capital costs of installing irrigation facilities. You may irrigate only 80 acres and if you grew irrigation crops in 1940, you must assume that the irrigation equipment must be replaced due to obsolence.

Livestock choices included beef cattle, dairy cattle, sheep or poultry. There is an extra cost of $200 for the first year to raise dairy cattle. Notice that you may raise up to $4,000 worth of beef cattle, dairy cattle, or sheep on your 320 acres and that each $1,000 investment in livestock will require 80 acres of land. Livestock may be mixed in units of $100.

BACKGROUND INFORMATION

Agriculture: 1935-40

Arkansas agriculture in the late 1930's was characterized by low productivity and very low prices. The Great Depression was just ending, and farm prices had not recovered from the lows recorded in the mid-1930's. Technology for improving agricultural yields through mechanization, fertilization, improved seeds, and other scientific techniques was available. Unfortunately, the low prices farmers received for crops at this time did not provide money to make such investments. Instead, farmers continued to use primitive machinery and technology. Though farming produced low incomes for most farmers, these incomes were better than living unemployed in the cities.

Agriculture: 1970-75

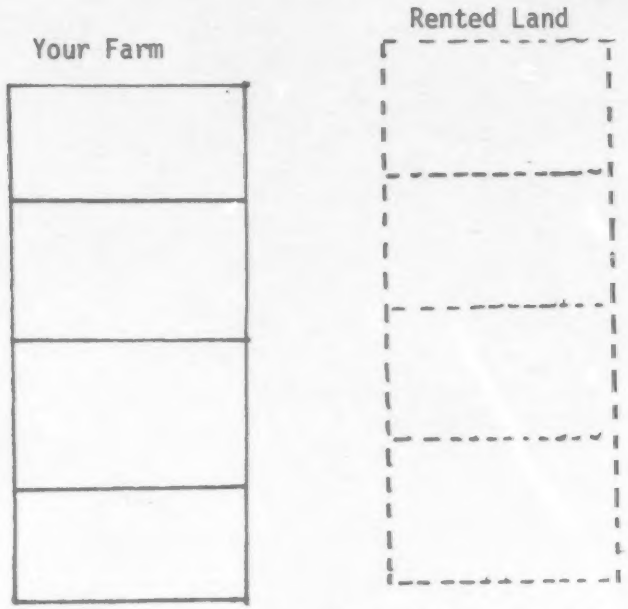
Uncertainty characterized agriculture of the early 1970's. Though most Arkansas agricultural products had become highly mecahnized and productive by 1970, farmers could still face severe economic hardships (conversely some American farmers became millionaires in the 1970's). Because of the Arab oil embargo fertilizer prices had more than doubled in the 1970's. Similarly, the unusual world weather patterns of the 1970's made the world alternate between surplus and deficiency in the production of some commodities. Farm prices fluctuated uncontrollably As an example, the price of soybeans ranged between $2.50 and $13.00 per bushel between 1970 and 1973. In the 1970's one year a good crop could make a farmer wealthy and similarly another year with a good crop could force the same farmer into bankruptcy.

*The two proceeding games were adapted from the High School Geography Project, University of Colorado, Boulder, Colorado.

1940 ACTIVITY SHEET

Year_____ Capital_____

	Allocation	Multiplier	Outcome
Unirrigated crops			
Cotton	$_____	_____	$_____
Corn	$_____	_____	$_____
Soybeans	$_____	_____	$_____
Livestock[3]			
Dairy cattle	$_____	_____	$_____
Beef cattle	$_____	_____	$_____
Sheep	$_____	_____	$_____
Poultry	$_____	_____	$_____
Cost of Living	$ 900	0	$ 0
Payment of indebtedness. .	$ 0	0	$ 0
Labor	$ 0	0	$ 0
Initial investment for irrigating[1]	$_____	0	$ 0
Initial investment for dairying[2]	$_____	0	$ 0
Rent	$_____	0	$ 0
Savings	$_____	1	$_____
TOTAL	$_____		$_____



Allocations must be made in 20 acre units, represented by small rectangles. *Each section represents 20 acres.

Costs per 20 Acre Unit	
Unirrigated crops	
Corn	$ 200
Cotton	$ 500
Soybeans	$ 300
Livestock	
Dairy cattle (Max. per 80 acres) .	$ 400
Beef cattle (Max. per 80 acres). .	$ 400
Sheep (Max. per 80 acres)	$ 300
Poultry	$ 200
Rent	$ 200

[1]There is an extra expense of $200 for the first year of irrigation.

[2]There is an extra expense of $400 for the first year with dairy cattle.

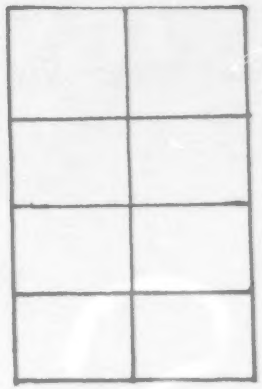
[3]Dairy cattle, beef cattle, and sheep investments are in $100. Livestocks may be mixed in units of $100.

1975 ACTIVITY SHEET

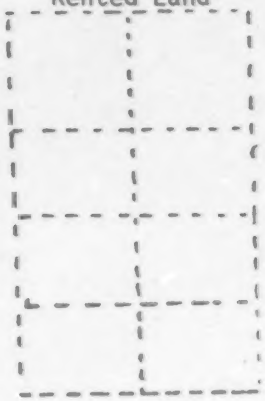
Year_____ Capital _____

	Allocation	Multiplier	Outcome
Unirrigated crops			
Cotton	$_____	_____	$_____
Corn	$_____	_____	$_____
Soybeans	$_____	_____	$_____
Irrigated Crops			
Rice	$_____	_____	$_____
Livestock[3]			
Dairy cattle	$_____	_____	$_____
Beef cattle	$_____	_____	$_____
Sheep	$_____	_____	$_____
Cost of Living	$_____	0	$ 0
Payment of indebtedness.	$_____	0	$ 0
Labor	$_____	0	$ 0
Initial investment for irrigating[1]	$_____	0	$ 0
Initial investment for dairying[2]	$_____	0	$ 0
Rent	$_____	0	$ 0
Savings	$_____	1	$_____
TOTAL	$_____		$_____

Your Farm



Rented Land



Allocations must be made in 40 acre units, represented by small rectangles. *Each section represents 40 acres.

Costs per 40 Acre Unit	
Unirrigated crops	
Cotton	$ 600
Corn	$ 400
Soybeans	$ 300
Irrigated Crops[1]	
Rice	$ 300
Livestock	
Dairy cattle (Max. per 80 acres) . . .	$ 600
Beef cattle (Max. per 80 acres) . . .	$ 600
Sheep (Max. per 80 acres)	$ 600
Poultry	$ 800

[1]There is an extra expense of $200 for the first year of irrigation.

[2]There is an extra expense of $200 for the first year with dairy cattle.

[3]Dairy cattle, beef cattle, and sheep investments are in $100 units. Livestock may be mixed in units of $100.

"END OF DOCUMENT"